OPERATOR'S MANUAL *for* 1951

LIGHT MEDIUM AND HEAVY DUTY TRUCKS

CHEVROLET

OPERATOR'S MANUAL

For 1951

Chevrolet Light, Medium and Heavy Duty Trucks

THIRD EDITION

INTRODUCTION

This booklet has been prepared to furnish information pertaining to the driving, care and maintenance of Chevrolet trucks as well as to provide technical data that may be of value or interest to truck owners.

The subject index at the right is a ready reference to the key subjects and will assist in finding any subject covered in the booklet.

Chevrolet Motor Division
General Motors Corporation
Detroit 2, Michigan

SUBJECT INDEX

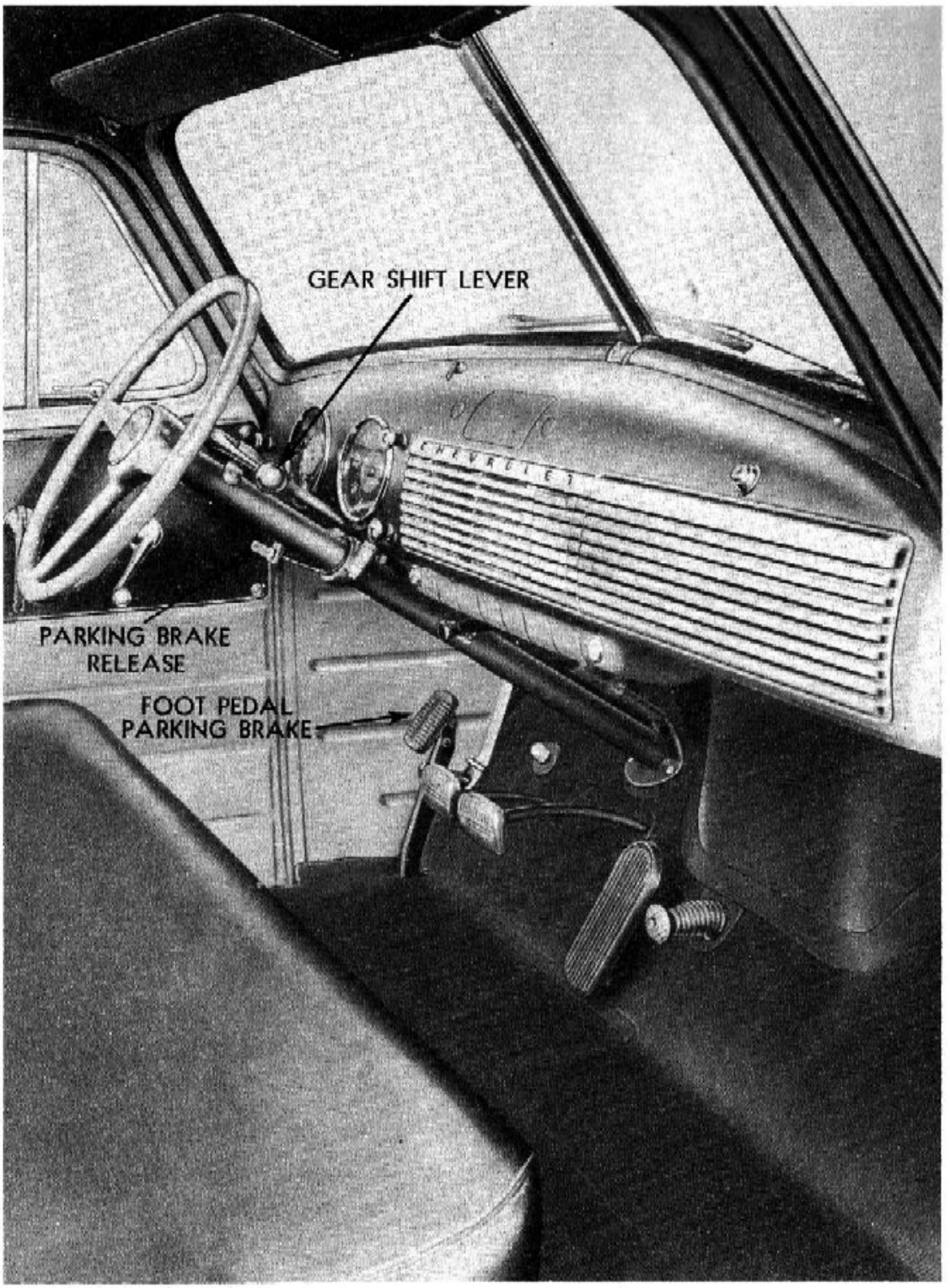

Fig. 1—Controls and Instruments—½ and ¾ Ton

CHAPTER I

DRIVER'S OPERATING INFORMATION

BREAKING-IN PERIOD

The crankcase of the engine in this vehicle, as received, is filled with a light body "breaking-in" oil. Use this oil only during the breaking-in schedule shown below. It should not be used after completion of the breaking-in schedule.

Check the oil frequently during the first 500 miles and at the end of 500 miles, drain the crankcase—while hot—and refill using the grade of oil recommended in Lubrication section.

To properly break-in the moving parts of the engine do not drive faster than:

35 miles per hour for the first 100 miles
45 miles per hour for the next 200 miles
50 miles per hour for the next 200 miles

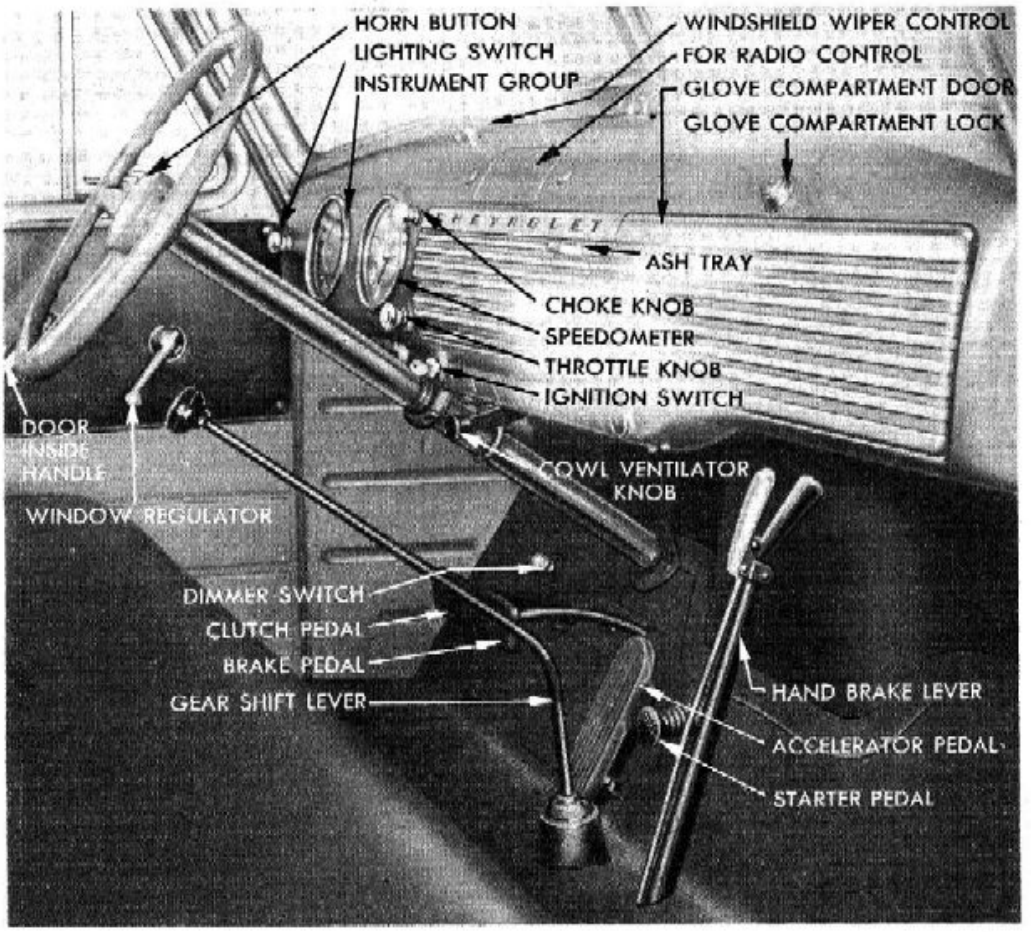

Fig. 2—Controls and Instruments—1-1½ and 2 Ton

CONTROLS AND INSTRUMENTS

The type, location and operation of instruments and controls vary on different models and makes of vehicles; therefore, regardless of the experience an owner or driver may have had it is advisable to familiarize one's self with the instruments and controls, and their use before driving this new truck. The locations of the various instruments and controls are shown in figures 1 and 2.

Instrument Group

Gasoline Gauge. The electrically operated gasoline gauge is at the upper left side of the instrument group (fig. 3). It is wired through the ignition switch; therefore, only indicates the amount of fuel in the tank when the ignition switch is turned on.

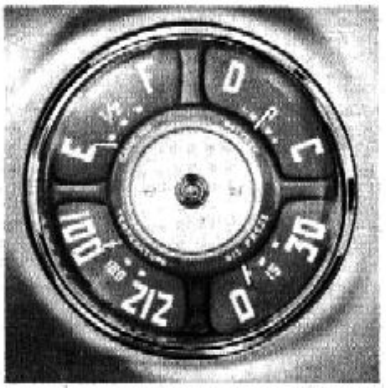

Fig. 3—Instrument Group

Temperature Indicator. The water temperature indicator is at the lower left side of the instrument group (fig. 3). It is, in effect, a thermometer with the operating bulb located in the water jacket at the left rear corner of the cylinder head. Normally this thermometer will register between 100 and 180 degrees when the engine is thoroughly warmed up. The driver should watch this instrument closely, as a quick rise in temperature usually indicates trouble. Should the temperature rise above 212 degrees the engine should be stopped and a check made for cause of overheating (see "Hints for Locating Road Troubles," page 91.

NOTE: Do not remove the radiator cap when engine is excessively hot, do not put water in a hot engine and do not run engine when indicator is above 212 degrees.

Ammeter (Battery Indicator). The ammeter is the right upper instrument in the group (fig. 3). The ammeter indicates the flow of current to and from the battery, except the current taken by the starting motor. When the engine is turned off or idling and any of the electrical equipment is in use, it is

natural for the ammeter to show discharge. When the engine is running at medium speed and most of the electrical equipment is turned off the ammeter should show a slight charge, depending on the state of charge of the battery. Should the ammeter show discharge when the truck is being driven at medium speed, trouble is indicated in the charging system and the battery will soon become discharged.

Oil Pressure Gauge. This instrument is in the lower right side of the instrument group (fig. 3). The oil pressure gauge indicates whether or not the oil pump is working, but does not indicate the amount of oil in the crankcase.

The pressure gauge reading is controlled by the engine speed and the oil being used. A low reading is normal at idling speeds with a warm engine and light oil; however, as the engine speed is increased the hand should move over near the "15" mark. In cold weather (especially with heavy oil) the hand may move over to the "30" mark at comparatively low engine speeds. This indicates that the oil is too heavy to properly lubricate the engine.

NOTE: Do not accelerate the engine excessively until the oil is sufficiently warm to permit a lower pressure. If the gauge does not show any pressure, stop the engine immediately and determine the cause.

Fig. 4—Speedometer

Speedometer. The speedometer is located to the right of the instrument group (fig. 4). As the vehicle is driven, the hand moves around the dial indicating the speed of the vehicle in miles-per-hour. The figures visible through the opening near the center of the speedometer indicate the total mileage the truck has been driven. This part of the speedometer is known as the odometer.

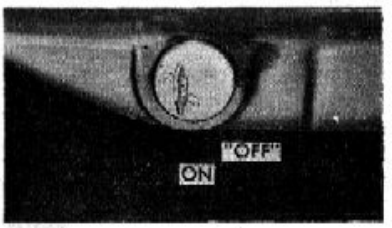

Fig. 5—Ignition Switch

Switches

Ignition Switch. The ignition switch is located near the bottom of the instrument panel to the right of the steering column (fig. 5).

The ignition switch is located in the low tension circuit and wired between the battery and the coil. This switch is used to make or break the ignition circuit when starting or stopping the engine.

The key is turned clockwise to turn the switch on and counterclockwise to turn the switch off.

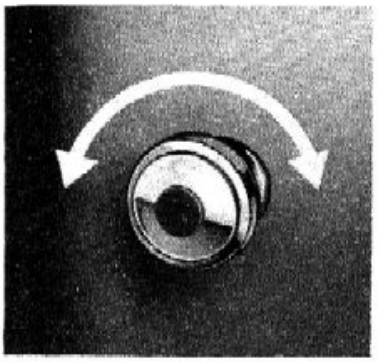

Fig. 6—Lighting Switch

Lighting Switch. The lighting switch, located to the left of the instrument group (fig. 6), controls the instrument lamps, headlamps, parking lamps and tail lamp. When this switch is pulled out to the first "on" position the parking lamps and tail lamp are lighted. When the switch is pulled out to the last position the headlamps and tail lamp are lighted. Current for the lighting circuits passes through a thermal circuit breaker located on the lighting switch behind the instrument panel. In case all lights fail to operate, check for trouble at the thermal circuit breaker. The instrument lights can be dimmed or turned off by turning the light switch knob clockwise.

Dimmer Switch. The dimmer switch located on the toe-board to the left of clutch pedal (fig. 10) is used to switch the headlamp beam from "high" to "low" or "low" to "high". Each time the switch is depressed the light beam is reversed. A headlamp beam indicator is located between the 0 and 80 at the bottom of speedometer. When the lights are on upper beam a red light is visible through the indicator opening. Avoid use of upper beam when meeting other vehicles on the highway or in city traffic.

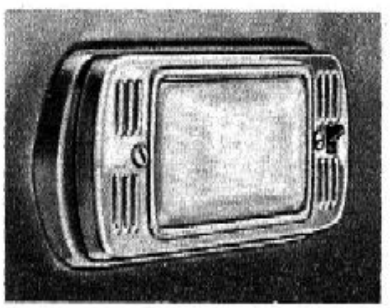

Fig. 7—Dome Light and Switch

Dome Lamp Switch. The dome lamp switch is located at the left end of the dome lamp assembly directly above the rear window (fig. 7). Moving this switch backward turns the light on and moving it forward turns the light off.

Horn Button. The horn button is conveniently located at the center of the steering wheel. Depressing the button blows the horn.

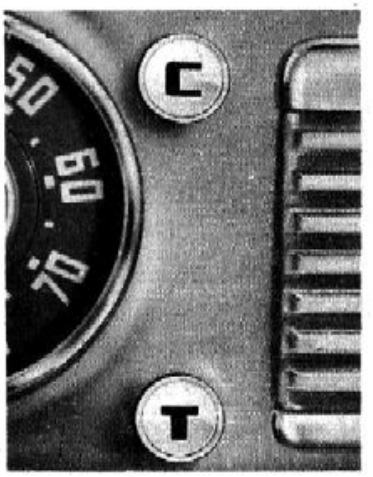

Fig. 8—Throttle and Choke Controls

Controls

Hand Throttle Control. The throttle control knob is located on the instrument panel directly above the ignition switch (fig. 8). Pulling out on the control knob opens the carburetor throttle to provide a uniform engine speed above the idle setting. It is generally advisable to pull the hand throttle control out slightly when starting the engine, especially if the engine has a tendency to stall a time or two after starting.

Choke Control. The carburetor choke control knob is located directly above the hand throttle control knob (fig. 8). The purpose of this control is to close (or partly close) the carburetor choke valve. This restricts the air intake and produces a richer fuel mixture for starting while at the same time opening the throttle by means of a fast idle link on the carburetor on all truck models except those equipped with an updraft carburetor.

When the engine is warm and the weather is warm, it should not be necessary to use the choke when starting the engine. When it is necessary to use the choke for starting, it should be pushed part way in as soon as the engine starts and all the way in as soon as the engine will run smoothly without its use.

CAUTION: Excessive use of the choke will provide a fuel mixture too rich to burn. Some of this unburned fuel will leak past the pistons and dilute the engine oil and result in improper lubrication, excessive engine wear and poor performance.

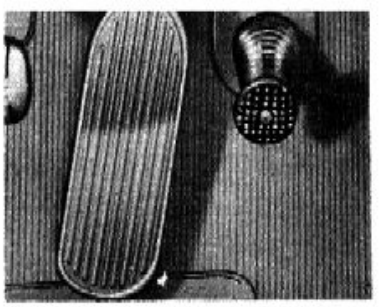

Fig. 9—Starter and Accelerator Pedals

Starter Pedal. The starter pedal is located near the center of the toe board to the right of the accelerator pedal (fig. 9). Depressing this pedal with the foot engages the starting motor pinion with the teeth in the

engine flywheel and closes the starter switch to provide an electrical circuit between the battery and starting motor, thereby cranking the engine. The starting motor draws considerable current from the battery; therefore, it should not be operated for more than 15 seconds at a time. If the engine does not start, locate the cause and correct it before the battery is run down.

CAUTION: The starter pedal must be released as soon as the engine starts and should never be depressed when the engine is running or serious damage may result.

Accelerator Pedal. The accelerator pedal, located to the left of the starter pedal (fig. 9), is used to open and close the carburetor throttle valve. The driver rests his right foot on this pedal and by varying the pressure applied, opens the carburetor throttle the correct amount to obtain the desired engine or vehicle speed.

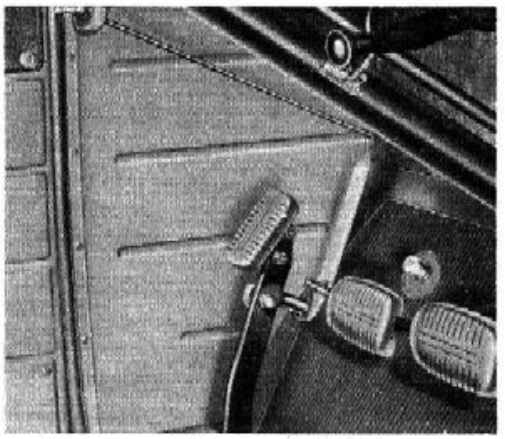

Fig. 10—Clutch and Brake Pedals

Clutch Pedal. The clutch pedal is conveniently located for use by the driver's left foot (fig. 10). It is used to engage and disengage the clutch, thereby connecting the engine to or disconnecting it from the transmission and drive line to rear wheels.

The clutch pedal should have ¾ to 1 inch free travel; if less than ¾″ adjust free travel (see Clutch Adjustment, page 41).

NOTE: Never drive with the foot resting on the clutch pedal as this produces undue wear on the throwout bearing and other parts.

Brake Pedal. The brake pedal is located to the right of clutch pedal (fig. 10). Depressing this pedal applies the hydraulic service brakes at all four wheels in proportion to the pressure applied on the pedal. For pedal free travel, see page 55.

Parking Brake. On all 1 Ton (except Forward Control), 1½ and 2 Ton, except C.O.E., the parking brake is hand operated with lever extending up through floor to the right of the gear shift lever with the grip just below the instrument panel (fig. 2). Hand brake lever on C.O.E. is to the left of the gearshift lever. Pulling this lever back applies the rear wheel brakes on 1 ton

by means of mechanical linkage entirely independent of the hydraulic system. The 1½ and 2 ton models are equipped with a propeller shaft brake. To release brakes, grip the two sections of the handle and pull lever back slightly, then move it forward.

Foot Operated Parking Brake. Parking brakes on all ½ and ¾ ton models and 1 ton Forward Control models are pedal operated. The operating pedal (fig. 10) is located to the left of the clutch pedal and pressing down on this pedal applies the rear wheel brakes through mechanical linkage entirely independent of the hydraulic system. To release the brakes a release lever is mounted on the instrument panel.

Gearshift Lever (4-speed Synchro-mesh Transmission) extends to the left and back from transmission cover dome at center of floor (fig. 2). This lever is used to shift the transmission gears to the desired position. Figure 11 shows the lever knob positions when the transmission is in neutral, reverse and the four forward speeds. To shift the transmission into any of the forward speeds, disengage the clutch, move the lever across neutral to right or left as desired, and then forward or back into gear.

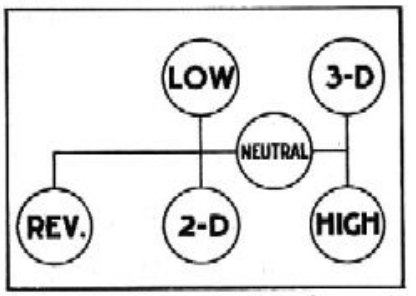

Fig. 11—Four Speed Transmission Shifting Diagram

To shift into reverse, disengage the clutch, move the lever to the left against the spring tension as far as it will go and pull it back into reverse position.

Gearshift Lever (3-speed Synchro-mesh Transmission). Gearshift control on all ½ and ¾ ton trucks with 3-speed transmission is located on the steering column (fig. 1). This mounting at the upper end of the steering column and the gearshift lever are similar to those used on the passenger car. The shift pattern is the same as heretofore except that it is now in a vertical plane instead of a horizontal plane as with the floor mounted gearshift lever.

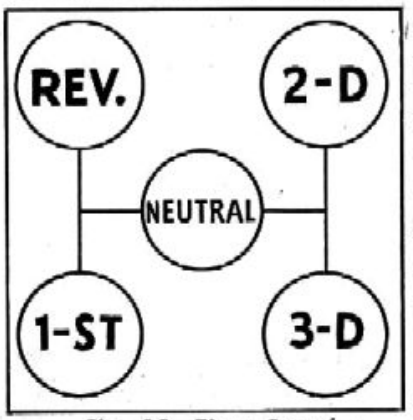

Fig. 12—Three-Speed Transmission Shifting Diagram

Figure 12 shows the gearshift pattern in neutral, reverse and three forward speeds. To shift into any gear position, disengage the clutch, move the shift lever up

or down from neutral position and then forward or back into the desired gear.

Cowl Ventilator Control Knob. This knob located below the instrument panel in line with the ignition switch (figs. 1 and 2) is used to open and close the cowl ventilator. When the knob is up toward the instrument panel the ventilator is closed and locked. By pushing the lever down and forward, the desired amount of air circulation can be obtained.

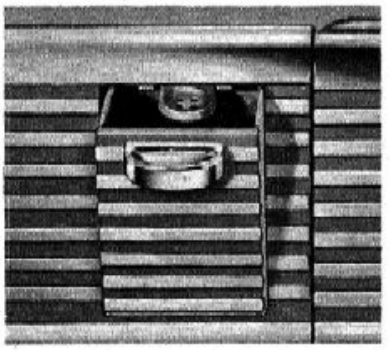

Fig. 13—Ash Tray

Ash Tray. A convenient ash tray is located in the instrument panel to the left of the package compartment (fig. 13). The tray is opened or closed by pulling back or pushing forward on the hande.

Instrument Panel Compartment Lock. The door to the convenient package compartment at the right end of instrument panel is controlled by a lock above the compartment (fig. 14). When the lock is unlocked, depressing the lock cylinder releases the latch and the door opens. When the lock is locked the cylinder cannot be depressed. The key used for the door lock and ignition switch is used to lock and unlock the package compartment.

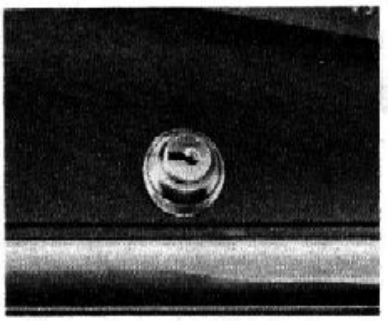

Fig. 14—Package Compartment Lock

Keys. Two identical (octagonal head) keys are furnished with each truck. These keys are used for locking and unlocking the right door, the package compartment and ignition. The key number is stamped on a "knockout" plug in each key (fig. 15). The dealer and the owner should make a record of this number so that the key can be easily replaced in case it is lost, and then the "knockout" plug should be removed so that unauthorized persons cannot obtain the key number and have a duplicate made.

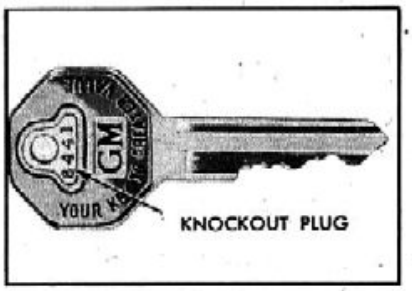

Fig. 15—Key

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Door Locks. Chevrolet trucks are equipped with theft-resisting door locks which provide a means of locking the cab when the truck is to be left unattended and a means of locking it from the inside.

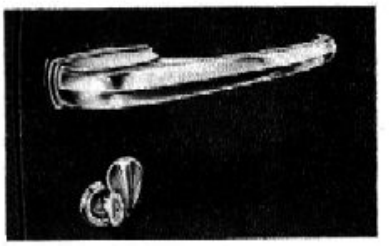

Fig. 16—Door Lock and Key

The right door lock cylinder is located in the door below the door handle. To unlock the right door insert key in lock and turn key clockwise as far as it will go and back to vertical position to remove key (fig. 16). To lock the door insert key in lock and turn key counterclockwise as far as it will go and back to vertical position to remove the key.

To lock either door from the inside it is only necessary to move the inside remote control handle forward, (fig. 17). Pulling the inside handle to the rear unlocks the door even when it has been locked with a key.

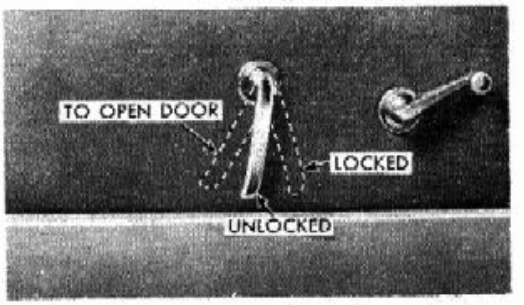

Fig. 17—Door Remote Control and Window Regulator

Window Regulators. The door windows are opened and closed by turning the window regulator handles located near the front upper corner of each door inner panel (fig. 17).

Door Ventipane. Operated directly by a turn down catch handle. Spring loaded friction device in the ventilator lower pivot holds the ventilator open to any position selected. Rain deflectors are used over the ventipane.

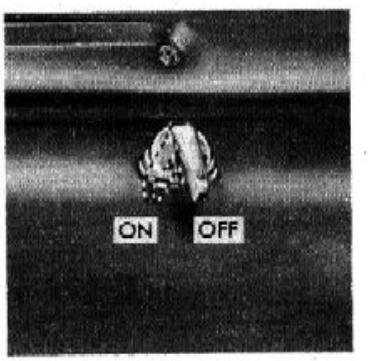

Fig. 18—Windshield Wiper Control Knob

Windshield Wiper. The windshield wiper motor is mounted under the instrument panel and is vacuum operated from the engine. The control knob (fig. 18) located on the instrument panel above the choke knob is used to turn the wiper "on" or "off". Moving the knob to the left turns the wiper on

and moving it to the right decreases wiper speed or turns it off completely.

Rear View Mirror. An adjustable rear view mirror is mounted on the left side of cowl in a position so that the driver can get a clear vision along the left side of truck by looking at the mirror through the left door window.

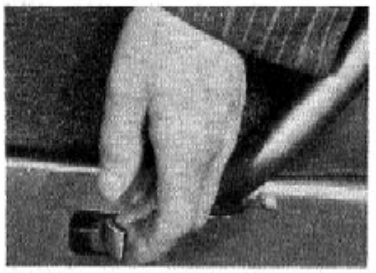

Fig. 19—Seat Adjuster

Seat Adjuster. The entire seat assembly can be moved forward or back to obtain the most comfortable position for the driver. As the seat is moved forward it raises and tips forward and as it is moved back it is lowered to accommodate a tall person.

Moving the adjuster handle forward (fig. 19) releases the seat adjuster lock so that the seat assembly can be moved forward or back as desired. Two coil springs assist in moving the seat forward.

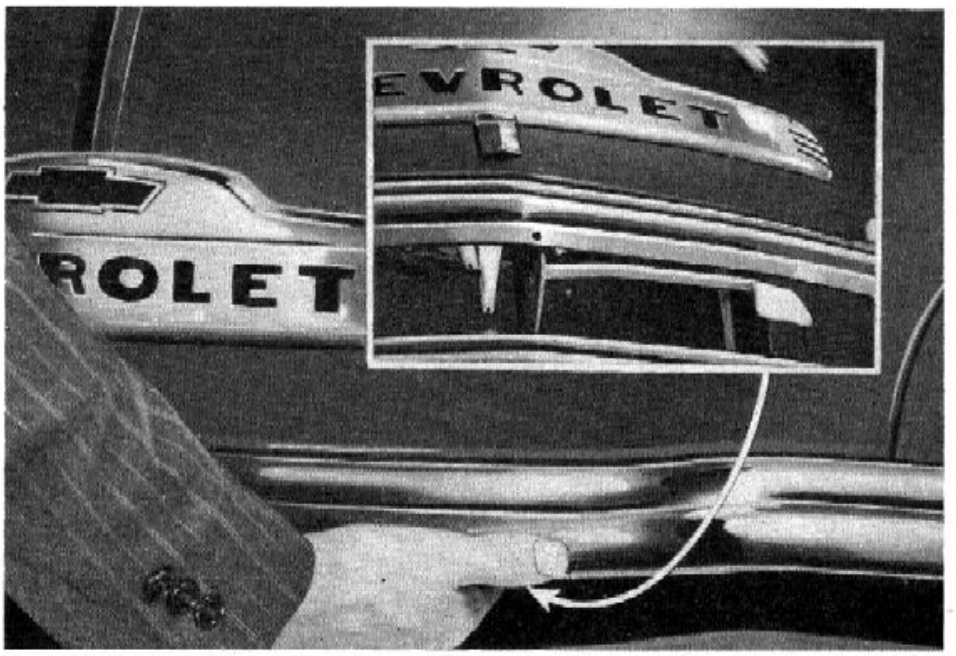

Fig. 20—Hood Lock Release

Hood Lock and Safety Catch. The hood is of the "alligator jaw" type and is held closed by a lock at the front. This lock

can be released by reaching in below the upper grille bar in line with the left end of name plate and pulling the lever forward (fig. 20).

The safety catch can then be released by reaching under the nose of hood and pulling forward and up on the catch release (fig. 21).

The hood can then be pushed up to the open position. The spring loaded hood support will assist in raising the hood and hold it open.

To close the hood, lower it to the safety latch position and then push down on nose of hood to lock it.

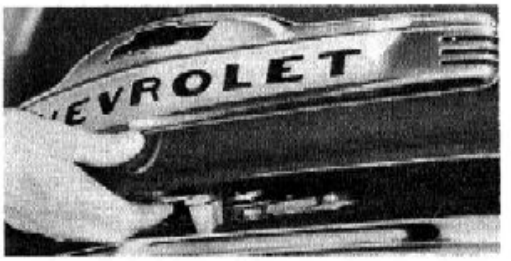

Fig. 21—Hood Safety Catch Release

¾ AND 1 TON FORWARD CONTROL UNITS

Instruments and gauges shown in Figure 22 are representative of control panels on bodies built by different body manufacturers. Operation of all instruments, gauges and control knobs are the same as outlined for the conventional truck models with the exception of the starter control.

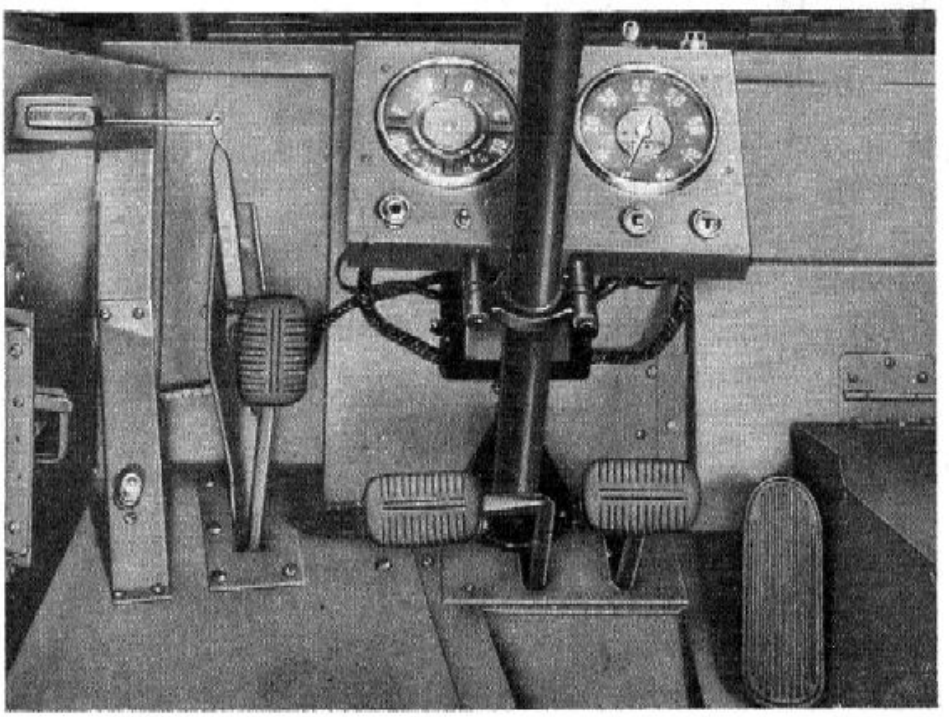

Fig. 22—Controls and Instruments—¾ and 1 Ton Forward Control

The starter control is of the push button solenoid type with the starter button located on the instrument panel face or top of panel. Release the starter button as soon as the engine starts and never press the button with the engine running or serious damage may result.

PRE-STARTING INSPECTION

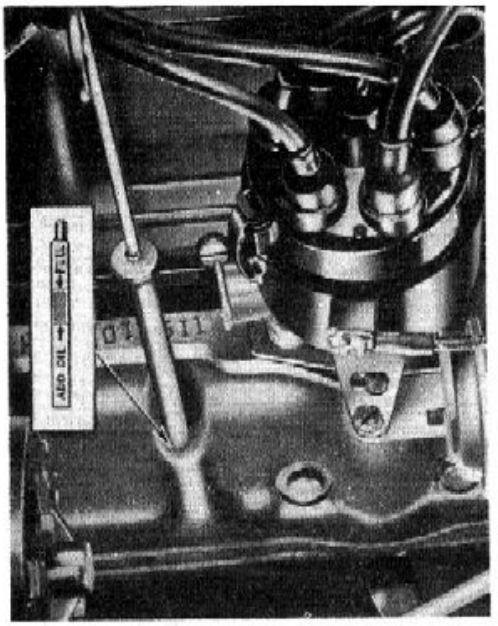

Fig. 23—Oil Gauge Rod

The following inspections are not necessary each time the vehicle is started providing the driver has recently driven the vehicle and is **certain** that attention is not required.

1. Raise the hood, remove the oil gauge rod (fig. 23), wipe oil from rod with clean cloth and replace. Remove gauge rod and note level of oil. If down to the "add oil" mark, oil should be added. See "Lubrication Instructions." Install oil gauge rod.

2. Remove radiator cap and check the level of coolant. If coolant is down a quart or more, water or anti-freeze should be added.

3. Check to make sure the tires are properly inflated. Underinflated tires wear rapidly and are subject to road damage.

4. Rear window, windshield, headlights, tail lamps and reflectors should be cleaned to provide clear vision and good lights.

STARTING THE ENGINE

1. Place ignition key in switch and turn key to vertical position to turn on ignition.

2. Pull choke knob out part or all the way depending on climatic conditions to provide an engine speed just above idle. If the engine is warm or in summer weather it is not generally necessary to use the choke at all. In extremely cold weather the choke should be pulled all the way out.

3. Make sure the transmission shift lever is in neutral. Depress the clutch pedal to relieve the load in the transmission.

4. Step on starter pedal, or on Forward Control models press button, to crank engine. **Remove foot from starter pedal or finger from starter button as soon as engine starts.** If engine does not start in 15 seconds, release pedal or button and check to see that the above operations have been performed correctly.

5. As soon as engine starts, push choke knob in part way and adjust throttle for smooth idle.

6. Note oil gauge and ammeter readings. Ammeter should show some charge unless engine is idling slowly. Oil gauge should show some pressure. In unusually cold weather the oil gauge needle may go over nearly to 30. If so, run the engine just above idling speed until the pressure drops to around 15 before driving vehicle. The choke knob should be pushed in all the way as soon as the engine is sufficiently warmed up.

GEARSHIFTING

Starting the Vehicle

1. Push clutch pedal down to disengage the clutch.

2. Move gearshift lever into low gear position. (If 4-speed transmission see Figure 11, or if 3-speed transmission see Figure 12.)

3. Release the parking brake.

4. Push down slightly on accelerator pedal and at the same time slowly engage the clutch. Continue to depress the accelerator pedal until the vehicle is moving.

Shifting to Higher Gears.

1. Depress clutch pedal and release accelerator at the same time. Move the shift lever into neutral and then to the next higher gear. See shifting diagrams, Figures 11 and 12.

2. Accelerate the engine slightly and slowly engage the clutch.

3. Accelerate the engine to about ⅓ maximum engine speed before shifting to the next higher gear and proceed as outlined above.

Shifting to Reverse (4-speed transmission).

The vehicle must not be moving forward when shifting to reverse.

1. Depress clutch pedal to disengage the clutch.

2. Move shift lever across neutral to left, against the spring tension as far as it will go. Move lever back into reverse (fig. 11).

3. If parking brake is on, release the brake.

4. Push down slightly on accelerator pedal and at the same time slowly engage the clutch. Control the vehicle speed with the accelerator.

Shifting to Reverse (3-speed transmission).

The vehicle should not be moving forward when shifting to reverse.

1. Depress clutch pedal to disengage the clutch.

2. Raise shift lever up across neutral and forward into reverse position. (fig. 12).

3. If parking brake is on, release the brake.

4. Push down slightly on accelerator pedal and at the same time slowly engage the clutch. Control the vehicle speed with the accelerator.

Shifting to Lower Gears

To obtain more pulling power for negotiating bad roads or climbing hills, or to travel at unusually slow speed it is sometimes necessary to shift to lower transmission gears. The shift from high to second with the 3-speed synchro-mesh transmission or from high to third or third to second with the 4-speed synchro-mesh transmission is accomplished in the same manner as up-shifting.

The following procedure should be used when shifting the 3-speed or 4-speed transmission from second to low.

1. Disengage the clutch and shift the transmission into neutral while maintaining enough pressure on accelerator to noticeably increase engine speed.

2. Engage clutch and quickly disengage it again.

3. Shift into the next lower gear quickly and then gradually engage clutch.

Shifting Two-Speed Rear Axle

The vacuum shift makes this operation comparatively simple as it is unnecessary to declutch while shifting. The

control lever for the vacuum shift is located below the instrument panel and to the right of the steering column (fig. 24). Turning this lever also shifts the speedometer adapter to maintain reasonably accurate speedometer and odometer reading regardless of the axle ratio used.

To shift from low speed to high speed, move control lever to high speed position as indicated on "DECAL" above speedometer, release accelerator, pause a second to allow engine speed to drop down, then again step down on the accelerator.

To shift from high speed to low speed, move control lever to low speed position, release accelerator and again step down on accelerator.

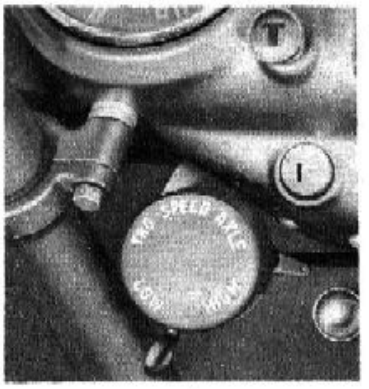

Fig. 24—Two-Speed Axle Shift Control

Stopping the Vehicle.

1. Remove foot from accelerator and place it on brake pedal. Push down on pedal to slow the vehicle down gradually (unless an emergency stop).

2. When the vehicle is nearly stopped, disengage the clutch and shift the transmission to neutral, continuing to apply the brakes until the vehicle is stopped.

3. If vehicle is to stand any length of time set parking brake, release clutch pedal and foot brake.

Starting on an Upgrade.

1. Set the parking brake to hold the vehicle from rolling back.

2. Disengage clutch and shift transmission into low gear.

3. Accelerate the engine and slowly release clutch pedal until clutch starts to engage, then release the parking brake as the clutch engages and the vehicle starts to move forward.

COLD WEATHER OPERATION

Cold weather presents many problems to the motoring public; however, the Chevrolet truck will be equally dependable in cold weather if given a minimum amount of attention.

1. The cooling system must be protected against freezing

by the use of anti-freeze solutions (see "Cooling System" and "Anti-Freeze"), or the system must be drained at the lower right corner of radiator and the left rear corner of cylinder block each time the vehicle is to stand any length of time.

2. Light oil should be used in the engine (see "Engine Lubrication").

3. The battery should be kept fully charged to provide the additional power necessary to crank a cold engine and furnish a good spark. A discharged battery will freeze in extremely cold weather which will make battery replacement necessary.

4. The carburetor, fuel pump and fuel tank should be kept free from water which will freeze and restrict fuel flow.

5. The ignition system should be kept in good condition.

6. Assuming that the above items have been given normal attention, the engine should start promptly, even in extremely cold weather, by following this simple procedure:

a. Turn on ignition.

b. Pull choke knob all the way out.

c. Depress foot accelerator slowly a few times.

d. Disengage the clutch.

e. Step on starter pedal or push button on Forward Control.

f. Release starter as soon as engine starts and push choke knob in slightly.

g. Regulate choke to provide a fast idle and gradually push choke knob in as engine warms up.

h. In abnormally cold weather the engine should be run slightly above idling speed for a few minutes to warm up the oil before driving the truck.

NOTE: Never race the engine until the oil gauge needle will stay around 15.

7. The Chevrolet cooling system is designed to properly cool the engine under most severe operating conditions in hot weather. A thermostat is used in the system to restrict the water circulation until the engine warms up. In very cold weather and under certain driving conditions such as house-to-house delivery where the engine idles a lot or is stopped

and started frequently, the production thermostat does not maintain high enough temperature for best economy and performance. In this case a higher temperature thermostat should be used or part of the radiator area covered.

HOT WEATHER OPERATION

Hot weather does not generally present as many problems as cold weather; however, a little special attention will pay dividends in the form of economy and convenience.

1. Check the radiator regularly for sufficient coolant as the rate of evaporation is higher in hot weather.

2. Make sure the fan belt is in good condition and properly adjusted.

3. Keep the radiator area free of bugs and other things that restrict air circulation.

4. Have the water level in the battery checked at 10-day intervals or oftener, if necessary.

5. Starting a cool engine in hot weather does not present a problem and the procedure outlined under "Starting the Engine" should be followed.

A hot engine is easily flooded and may start hard. If the carburetor is flooded proceed as follows:

a. Turn on ignition.

b. Pull hand throttle knob out about ½".

c. **Do not** pull choke knob out or step on accelerator.

d. Depress starter pedal or starter button without depressing accelerator.

e. When engine starts, release starter, but do not accelerate engine.

f. Regulate hand throttle knob for desired engine speed.

If the engine still does not start look for trouble in the fuel pump or ignition systems.

TIRE INFLATION

Tire pressures should be checked at least once a week and inflated according to the following table.

Avoid underinflation to prevent pinched tubes, rim bruises, excessive heat, and irregular or rapid wear.

Avoid overinflation to prevent tire ruptures, hard riding, irregular or rapid wear and reduction of skid resistance.

Inflation Table

6.00-16 6-Ply Rating.....front 30 pounds, rear 36 pounds
6.00-18 6-Ply Rating.....front 30 pounds, rear 36 pounds
6.50-16 6-Ply Rating.....front 26 pounds, rear 36 pounds
6.50-20 6-Ply Rating.....front 40 pounds, rear 50 pounds
6.50-20 8-Ply Rating.....front 50 pounds, rear 65 pounds
6.70-15 6-Ply Rating.....front 26 pounds, rear 30 pounds
7.00-17 6-Ply Rating.....front 40 pounds, rear 45 pounds
7.00-17 8-Ply Rating.....front 40 pounds, rear 55 pounds
7.00-18 8-Ply Rating.....front 40 pounds, rear 55 pounds
7.00-20 8-Ply Rating.....front 40 pounds, rear 55 pounds
7.00-20 10-Ply Rating.....front 45 pounds, rear 70 pounds
7.50-17 8-Ply Rating.....front 40 pounds, rear 60 pounds
7.50-17 10-Ply Rating.....front 40 pounds, rear 75 pounds
7.50-20 8-Ply Rating.....front 40 pounds, rear 60 pounds
7.50-20 10-Ply Rating.....front 45 pounds, rear 75 pounds
8.25-18 10-Ply Rating..... rear 65 pounds
8.25-20 10-Ply Rating.....front 40 pounds, rear 65 pounds
8.25-20 12-Ply Rating.....front 60 pounds, rear 75 pounds
9.00-18 10-Ply Rating..... rear 65 pounds
9.00-20 10-Ply Rating..... rear 65 pounds
10.00-18 12-Ply Rating..... rear 70 pounds

15 Inch Tires

Ply Rating	Load per Tire	Tire Pressure
6	1410 pounds 1500 pounds	36 pounds 40 pounds
8	1410 pounds 1500 pounds 1590 pounds 1670 pounds	36 pounds 40 pounds 44 pounds 48 pounds

Tire Rotation. Proper inflation is the prime factor in satisfactory tire life; however, even better tire service can be obtained by rotating the tires every 3,000 to 5,000 miles.

CHAPTER II

DESCRIPTION, CARE AND MAINTENANCE

PREVENTIVE MAINTENANCE

The following table will indicate some of the things which should be done at regular mileage intervals to assure your receiving the maximum, not only in performance, but in economy.

Mileage	Lubricate Chassis *	Change Oil †	Clean Air Cleaner ‡	Clean Spark Plugs	Cross-Change Tires	Tune Engine	Complete Inspection By Dealer	Pack Front Wheel Bearings
500		✪						
1000	✪							
2000	✪	✪	✪					
3000	✪			✪	✪			
4000	✪	✪	✪					
5000	✪					✪	✪	
6000	✪	✪	✪	✪	✪			
7000	✪							
8000	✪	✪	✪					
9000	✪			✪	✪			
10000	✪	✪	✪			✪	✪	✪
11000	✪							
12000	✪	✪	✪	✪	✪			
13000	✪							
14000	✪	✪	✪					
15000	✪			✪	✪	✪	✪	

*For complete instructions, see Charts on pages 82 to 89.

†For complete recommendations on changing oil and proper grade of oil to use, see pages 70 to 75.

‡Also crankcase ventilator and hydrovac air cleaners when used.

The following operations should be done as indicated:

Period	Check Battery	Check Air In Tires	Flush Cooling System	Add Anti-Freeze
Weekly	✪	✪		
Spring			✪	
Fall			✪	✪

ENGINE

Description. The Chevrolet six cylinder valve-in-head truck engines are the prime factor in Chevrolet's outstanding performance and economy. They are designed to give long trouble-free life. Chevrolet's four-way engine lubrication system provides the correct amount of lubrication to all moving parts.

Full stroke length water jackets, surrounding all cylinders, provide uniform cooling and prevent cylinder distortion which would cause undue wear and poor oil economy.

The water passages in the cylinder block and cylinder head properly direct the flow of water to provide uniform cooling of the engine (fig. 25).

Care. The engine oil level should be checked each time fuel is purchased and oil added when necessary. (See Lubrication Section.) The engine should be inspected occasionally for oil and water leaks and the necessary repairs made. Keep the engine clean externally.

Valve Tappet Adjustment. Valve tappet adjustment should be checked when the engine is thoroughly warmed up, preferably

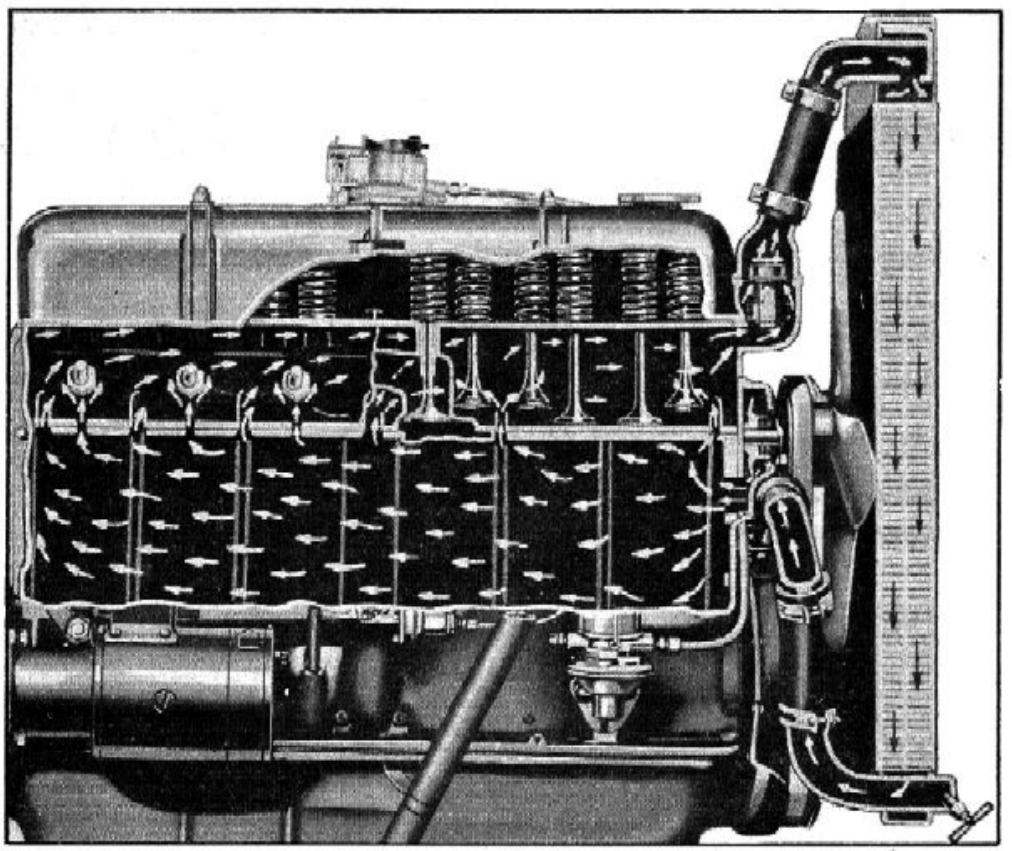

Fig. 25—Water Flow Through Cooling System

when the truck comes in from a run or after the engine has been run at a fast idle for 30 minutes.

1. Remove rocker arm cover attaching nuts and rocker arm cover.

2. Lubricate the valve stems with engine oil to insure free movement of the valves in their guides.

3. Check the clearance between the rocker arms and the valve stems with a feeler gauge (fig. 26). The clearance should be as follows:

	Intake Valves	Exhaust Valves
Normal Operation	.006" to .008"	.013" to .015"
Heavy-Duty Operation ...	.010"	.020"

4. When adjustment is necessary loosen the rocker arm adjusting screw lock nut and turn the screw clockwise slightly to decrease clearance and counterclockwise to increase clearance (fig. 26). Tighten lock nut and recheck clearance.

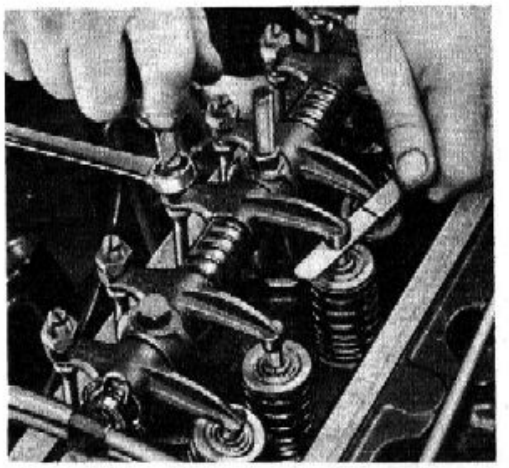

Fig. 26—Valve Tappet Adjustment

5. Adjust remaining valve clearances in the same manner.

6. Install the rocker arm cover using a new gasket. Make sure cover seats properly on gasket and tighten retaining nuts. Check for oil leaks.

Carburetor

Description—Downdraft Carburetor. The downdraft carburetor used on all Chevrolet trucks (except Cab-Over-Engine and Forward Control models) contributes materially to Chevrolet's economy and performance. It is comparatively simple in design and construction; therefore, requires very little care or attention.

A concentric fuel bowl is used in which the main metering jet is submerged. Twin floats control the fuel level in the carburetor. A common passage for both the idle and main metering systems provides for a continuous flow from the idle to the main metering system resulting in continual smooth performance.

This carburetor has a vacuum controlled power jet and a throttle operated accelerator pump to aid in providing the desired economy and performance.

Description—Updraft Carburetor. The updraft carburetor used on the Cab-Over-Engine and Forward Control trucks is mounted below the manifold. It is equipped with a vacuum controlled power jet and a throttle operated accelerating pump to aid in providing the desired economy and performance.

Care. Tighten the carburetor to manifold and the manifold to cylinder head stud nuts to prevent air leaks. Keep the carburetor clean externally and have it completely overhauled at regular intervals so that foreign matter in the carburetor and worn parts will not affect correct carburetion.

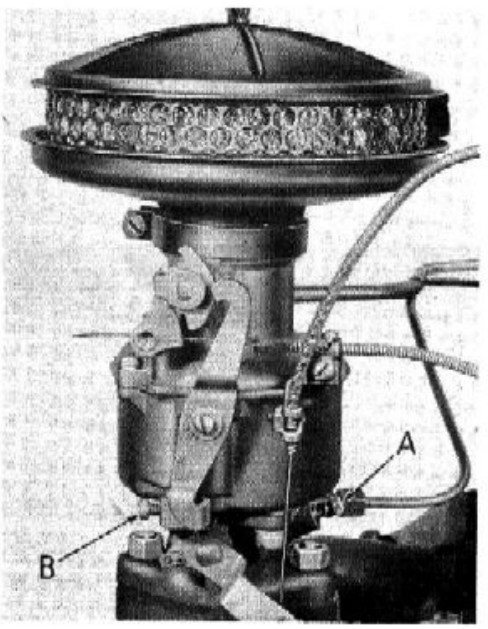

Fig. 27—Downdraft Carburetor Adjustment

Maintenance—Downdraft Carburetor. There are but two adjustments on the carburetor, one for idling mixture and the other for idling speed. These adjustments should be made together as changing the adjustment on one affects the other.

Run engine a few minutes to warm it up. Push choke knob in all the way. Turn idling mixture adjusting screw "A" (fig. 27) in (clockwise) as far as it will go and then back it off 1¾ turns. Let engine idle at 450 to 500 revolutions per minute and turn idling mixture adjusting screw "A" in or out as necessary to obtain a smooth idle.

Before adjusting the idling speed make sure the hand throttle knob and choke knob are pushed in all the way and that the accelerator and throttle linkage is free so that throttle lever stop screw "B" (fig. 27) is against the stop. Turn screw "B" in or out to obtain an idling speed of 450 to 500 revolutions

per minute. If necessary readjust idling mixture screw "A" as explained above to obtain a smooth idle.

Maintenance – Updraft Carburetor. Warm up engine to normal operating temperature and make sure choke and throttle knobs are in all the way. Adjust the engine speed to 450 to 500 revolutions per minute by turning the throttle stop screw "B" in or out as desired (fig. 28).

Turn the idle mixture adjusting screw "A" in or out as necessary to provide a smooth idling mixture. If the carburetor is in good condition the best idling mixture should be obtained with the idling mixture screw between ½ and 1½ turns open.

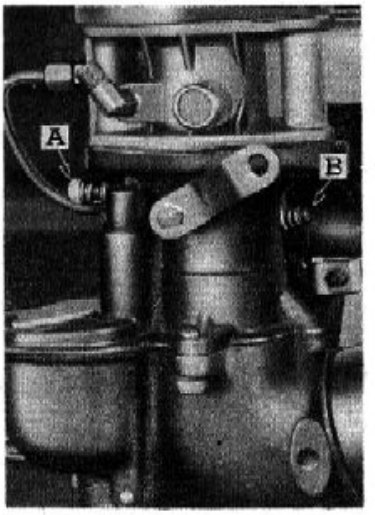

Fig. 28—Updraft Carburetor with Governor

Air Cleaner

Description—Standard Cleaner. All air taken into the carburetor to mix with the fuel passes through the combined air cleaner and flame arrestor mounted on the carburetor at the air intake. Dust, dirt and other foreign material that would otherwise be taken into the engine is trapped in an oil dampened filter element in the air cleaner. This filter element acts as a flame arrestor in case of engine backfire.

Description—Heavy Duty Cleaner. In certain sections of the country or under certain operating conditions where an unusual amount of dirt is encountered a heavy duty air cleaner of the oil bath type is available. This cleaner is interchangeable with the regular cleaner and may be had as special equipment on a new truck or purchased through parts service. This cleaner will not affect the power or economy of the engine in any way.

The heavy duty cleaner first takes the incoming air down over a pool of oil where most heavy particles of dirt are deposited and then up through an oil moistened filter element to complete the cleaning job.

Care. Keep the air cleaner cover wing nut and the cleaner to carburetor clamp screw tight.

Maintenance—Standard Cleaner. Under ordinary conditions where the truck is driven on hard surface roads, the air cleaner should be serviced every 2,000 miles. Under extremely dusty conditions, often encountered on gravel or dirt roads, the air cleaner should be serviced at more frequent intervals.

Fig. 29—Servicing Standard Air Cleaner

Servicing is accomplished by removing the cover wing nut, the cover and the filter element (fig. 29). Slush the filter element in cleaning solvent until all foreign matter is removed, let it drain thoroughly and then dip it in clean engine oil. Let all surplus oil drain from element, wipe all dirt from cleaner body and cover, and reassemble cleaner.

Maintenance—Heavy Duty Cleaner. The oil level in the air cleaner reservoir should be checked at regular intervals and sufficient S.A.E. 50 oil added in summer and lighter oil added in winter. Adding oil and servicing the cleaner will vary greatly, depending upon operating conditions. Experience will tell when these services should be performed. Servicing of this cleaner, an important operation, must be performed as follows:

Loosen clamp screw and remove air cleaner assembly. Remove wing nut which retains the cover and remove cover and filter element assembly (fig. 30).

Fig. 30—Servicing Heavy Duty Air Cleaner

Empty the oil out of the cleaner reservoir and clean out all accumulated dirt. Wash filter element by slushing it in cleaning solvent until all foreign matter is removed and dry thoroughly. Wash cleaner body in cleaning solvent and wipe dry. Fill the oil reservoir with one pint of S.A.E. 50 oil in summer and a lighter grade in winter.

Reassemble the filter element to the cleaner, being sure that the flange seats properly against the cleaner body. Install

the cover, making sure that the gasket is clean and in good condition. Install and tighten wing nut.

Install the cleaner making sure that the felt pad rests down against the carburetor to assure an air tight seal. Tighten clamp.

Crankcase Filler and Ventilator

All models except ¾ and 1 ton Forward Control and C.O.E. trucks are oil filled through the valve rocker arm cover. Crankcase ventilation is accomplished through a ventilator tube assembly located at the lower right side of the cylinder block (fig. 31).

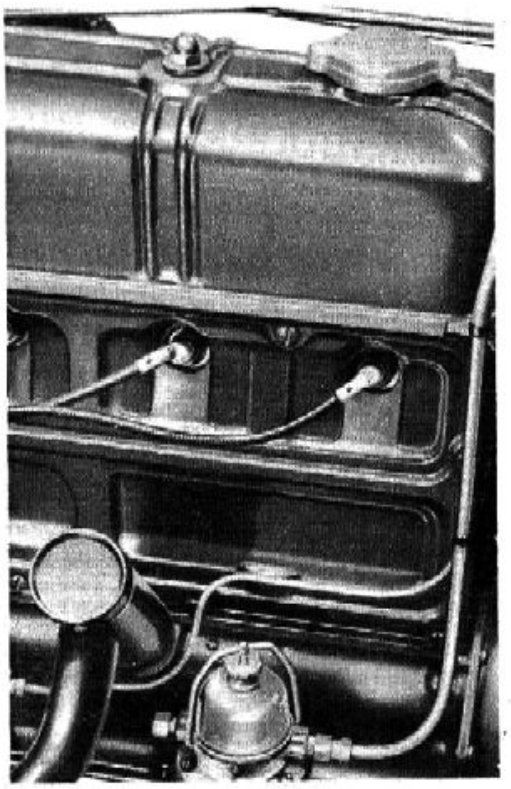

Fig. 31—Filler Cap and Ventilator

All C.O.E. trucks are oil filled through a combined oil filler and ventilator tube assembly also located at the lower right side of the cylinder block.

Forward Control units are oil filled through a straight oil filler pipe assembly located at the lower right side of the cylinder block. Ventilation is provided by a vacuum operated ventilator consisting of a vacuum pipe attached at one end to the oil filler assembly and at the other end to a spring loaded, variable opening ventilator valve at the intake manifold. Have this unit cleaned by an Authorized Chevrolet Dealer at regular intervals.

Fuel Pump

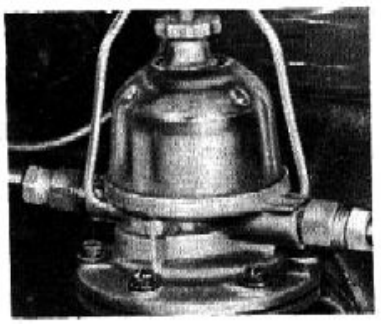

Fig. 32—Fuel Pump

Description. The fuel pump is mounted on the right side of engine (fig. 32) and is operated by an eccentric on the engine camshaft. It pumps fuel from the fuel tank and delivers it to the carburetor.

Care. The fuel pump to engine attaching bolts should be kept properly tightened to prevent oil leaks.

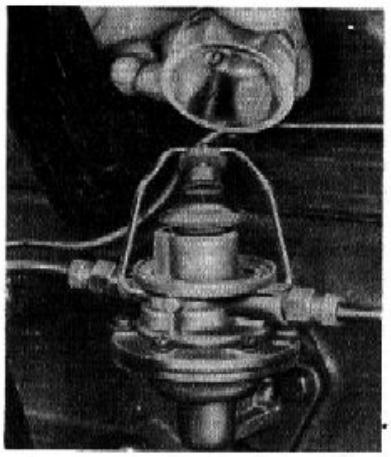

Fig. 33—Fuel Pump Cleaning

The fuel pump glass bowl retaining nut should be kept properly tightened. When water or dirt is visible in the bowl it should be removed and cleaned as instructed below.

Maintenance. Loosen glass bowl retaining nut and remove glass bowl (fig. 33). Clean all water and dirt from bowl and pump. Remove the gasket and clean the gasket seat. Inspect and if necessary remove and clean filter screen. Install new gasket and the bowl. Tighten retaining nut securely. Start engine and run until fuel pump bowl fills with gasoline. Inspect for leaks.

If the fuel pump does not function properly when the bowl and gasket is known to be seating properly it is advisable to replace the fuel pump or have it serviced by an authorized dealer.

Replacement. Hold the gasoline line fittings in the pump with a wrench and remove the pipe connector nuts. Remove the fuel pump to engine cap screws and remove fuel pump. Remove pipe fittings from pump. Obtain new pump and pump to engine gasket. Install pipe fittings in new pump and install pump on engine using new gasket. Connect gasoline lines, start engine and check for pump operation and possible leaks.

Governor

Description. Governors are standard equipment on the 1½ and 2 ton school buses. They are also available on other models as special equipment when the truck is ordered, or through the dealer's service department.

The governor is installed between the carburetor and the intake manifold (fig. 34) and automatically governs the speed at which the engine and truck may be operated. The adjusting cap is locked with a seal which should be left in place or a new seal in-

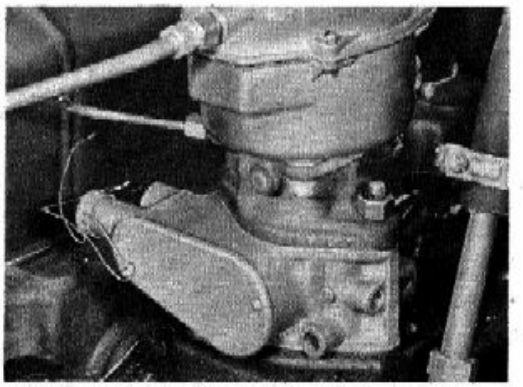

Fig. 34—Governor (in place)

stalled when adjusting the engine speed as this is the only protection against tampering by unauthorized persons.

Care and Maintenance. The attaching bolts should be kept tight and the governor should be kept clean externally. If the governor requires any service attention the truck should be taken to an authorized service station.

Ignition System

Description. The ignition system consists of the ignition switch to open and close the circuit, the coil to induce high voltage, the distributor to make and break the low tension circuit and distribute the high tension current to the correct spark plugs, the spark plugs to provide the spark in the combustion chamber and the necessary wiring (fig. 35). The battery is the source of current for the ignition system when starting the engine or operating at idling speed. The generator furnishes the ignition current at higher speeds.

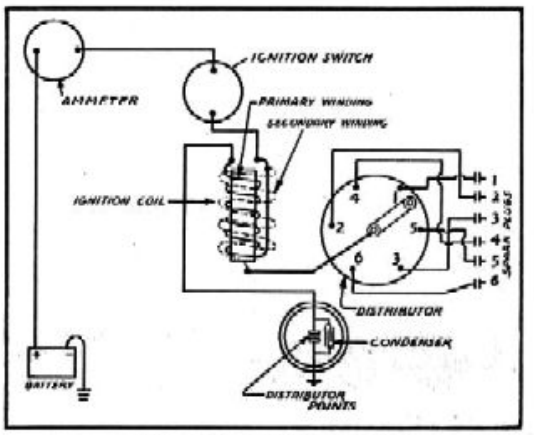

Fig. 35—Ignition Circuit

The distributor mounting provides a means of properly setting the initial ignition timing. The spark advance for various speeds and loads is controlled automatically by governor weights and vacuum control in the distributor. The vacuum control is connected to the carburetor.

The octane selector at the rear of the distributor mounting provides a means of advancing or retarding the ignition timing for the grade of fuel being used.

Chevrolet trucks use 14 millimeter spark plugs. These plugs operate at a more satisfactory temperature as they warm up more quickly, yet run at a lower temperature under severe operating conditions.

Care. The battery and generating system must be kept in good operating condition in order to obtain satisfactory operation of the ignition system. All wiring connections in the ignition cir-

cuit should be kept tight and free from dirt and corrosion. Keep the high tension wires free from grease and tight in the distributor cap and coil.

Maintenance—

Distributor Points. Correct distributor point gap is very important. The distributor points are cleaned and adjusted as part of a good engine tune-up. If their condition is questioned, release the distributor cap clamps, remove cap and lift off rotor. Separate the points and inspect them for being pitted or badly burned. Clean the points with a breaker point file. If the points do not clean up with a few strokes of the file they should be replaced.

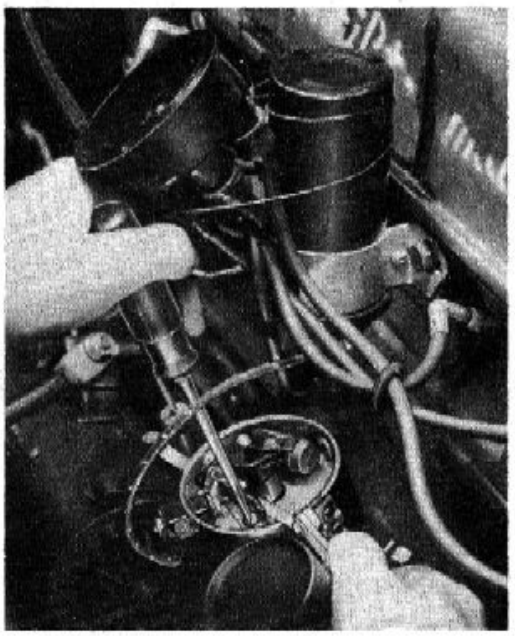

Fig. 36—Adjusting Distributor Points

Point Adjustment. Crank the engine or place transmission in high gear and rock the truck forward enough to place the movable point cam follower on the peak of cam and check the point opening, using a feeler gauge. Correct adjustment is .018". If necessary to adjust the points, loosen the stationary point lock screw and turn the eccentric screw as necessary (fig. 36). Tighten lock screw and recheck point opening. Install rotor, place cap on distributor and turn it until it drops into locking position. Clamp the cap in position.

Point Replacement. In case the points require replacement, loosen the inside terminal nut at the movable point spring and lift the point out. Remove the stationary point lock screw and remove point and arm. Place the new stationary point and arm in position and install the lock screw. Place the movable point on its shaft and position the spring on the terminal behind lock clip and tighten nut securely. Adjust points and assemble distributor as explained above.

Reassemble the distributor cap and spark plug wires. Make sure that all terminals of the primary wire at the ignition coil and distributor are clean and tight.

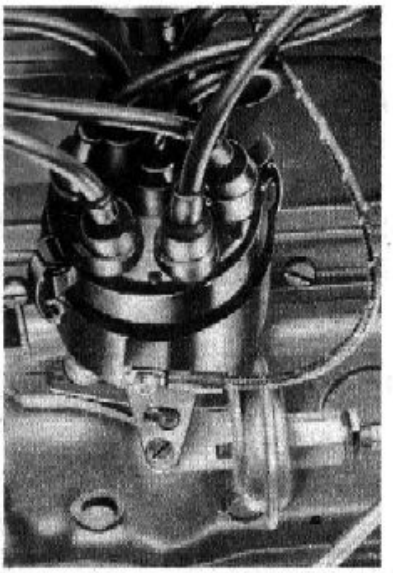

Fig. 37—Octane Selector

Ignition Timing. Set the octane selector at "0" on the scale (fig. 37), and attach a Neon Timing Light to No. 1 spark plug. Start the engine and run it at idling speed. Loosen distributor clamp and rotate the distributor body clockwise or counterclockwise until the steel ball in the flywheel lines up with the pointer on the flywheel housing. Tighten the distributor clamp screw.

Octane Selector. When changing to a grade of fuel with a higher or lower octane rating it may be advisable to advance or retard the spark slightly. Advance the spark to take advantage of higher octane fuel and retard it to prevent excessive detonation with lower octane rated fuels. Note the position of the octane selector scale (fig. 37), loosen the clamp bolt and move the distributor assembly toward advance or retard as desired and tighten the clamp bolt securely. By adjusting the spark in this manner it can be readjusted to the original setting when desired without special ignition timing equipment.

Spark Plugs. Clean the spark plugs thoroughly, using an abrasive type cleaner. If the porcelains are badly glazed or blistered, the spark plugs should be replaced. All spark plugs must be of the same make and number or heat range.

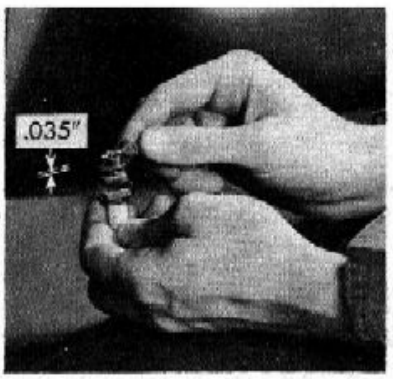

Fig. 38—Setting Spark Plug Gap

Adjust the spark gaps to .035", using a round feeler gauge (fig. 38).

CAUTION: In adjusting the spark plug gap never bend the center electrode which extends through the porcelain center; always make adjustment by bending the side electrode.

Install the spark plugs in the engine, using new gaskets.

If a tension wrench is used when installing the plugs, the proper tension is 20 to 25 foot pounds maximum. If a tension wrench is not available, screw each plug in "finger tight" and then with a wrench tighten each plug ½ to ¾ turn beyond this.

Manifold Heat Control Valve. The manifold heat control valve is located on the inside of the exhaust manifold and is operated by the thermostatic spring, the center of which is attached to a slot in the valve shaft and the outer end bears against a stop pin on the manifold.

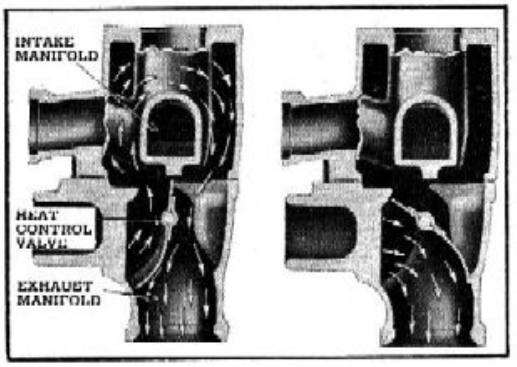

Fig. 39—Manifold Heat Valve

When the engine is cold the valve is in the "heat-on" position as shown in the left half of Figure 39, and the hot exhaust gases are directed against the center of the intake manifold. As the engine warms up, the thermostatic spring moves the valve to the "heat-off" position as shown in the right half of Figure 39 and directs the exhaust gases away from the center of the intake manifold.

This thermostatic control results in maintaining the proper temperature of the incoming gases under all operating conditions.

The tension of the thermostatic spring is very important. When it is too tight the heat will not be turned off the intake heat riser as the engine warms up, with the result that the incoming gases will be expanded several times greater in volume than in normal operation and it will be impossible to get a full charge of gas and air into the cylinders. This condition reduces engine power and maximum speed; it will also cause detonation and overheating at higher speeds. Therefore, it is important that the thermostatic spring be wound up just enough to slip its outer end over the anchor pin in the manifold

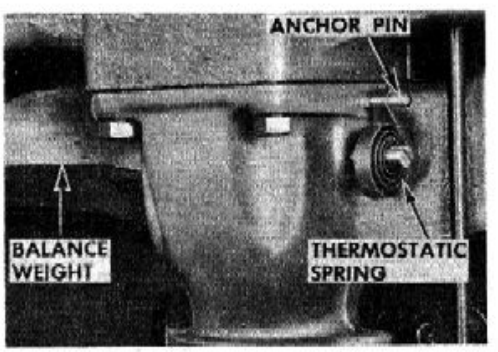

Fig. 40—Manifold Heat Valve Thermostatic Control

and no more (fig. 40). This is approximately ½ turn of the spring from its position when unhooked.

Engine Tune-Up

In order to enjoy the performance and economy which Chevrolet built into the truck engine it must be kept properly tuned. Normally this service should be performed every 5,000 miles. A thorough engine tune-up requires the use of special equipment not generally in the hands of truck owners. For this reason it is advisable to have this service performed by a Chevrolet dealer. However for the benefit of those owners who perform many of their maintenance repair operations we will outline the operations which should be given attention when tuning an engine.

Compression. Compression tests should be made before performing tune-up operations to determine the necessity for internal repairs—an engine with poor or uneven compression cannot be successfully tuned.

Spark Plugs. Remove, clean and adjust (page 31).

Battery. Check state of charge by testing specific gravity (page 58).

Battery Cables. Clean and tighten cable terminals.

Distributor. Clean and adjust distributor points. Inspect cap and rotor (page 30).

Ignition Timing. Check and adjust ignition timing (page 31).

Fuel Pump. Clean fuel pump filter bowl and screen (page 28).

Air Cleaner. Clean air cleaner (page 26).

Manifolds. Tighten manifold bolts to guard against intake and exhaust leaks.

Valve Clearance. Check and adjust valve lash to proper clearance (page 23).

Carburetor. Adjust idling speed and mixture (page 24).

Cooling System. Tighten all hose connections. Check fan belt adjustment and the cooling system for coolant leaks.

Road Test. After the engine is tuned the truck should be road tested for performance. During this test the octane selector should be adjusted for the grade of fuel being used. For best performance and economy the octane selector should be set to produce a slight "ping" upon acceleration at wide open throttle.

COOLING SYSTEM

Description. The cooling system consists of the radiator, fan, water pump, thermostat, water passages in cylinder block and cylinder head, and the necessary connections and fittings (fig. 25). The function of the cooling system is to keep the engine at the most efficient operating temperature under all driving conditions.

The permanently lubricated centrifugal type water pump keeps the water circulating; therefore, constantly bringing cooler water to the areas around the combustion and exhaust chambers where most heat is generated. The fan assures a constant flow of air through the radiator and around the engine to aid in cooling the water. The thermostat restricts the flow of water until the engine warms up to normal operating temperature.

Care. The cooling system must be kept in good condition if it is to properly cool the engine under all operating conditions. The radiator cap should be removed and the coolant level checked frequently. If the coolant level is low, water or anti-freeze should be added. C.O.E. models are equipped with a pressure type radiator cap.

NOTE: The volume of solution in a Chevrolet cooling system expands about one quart when its temperature is changed from 32° to 160°; therefore, the cooling system should be left from one pint to one quart low if filled cold, especially when anti-freeze is used, to prevent loss of solution through the radiator overflow pipe.

The fan belt tension should be checked occasionally and, if necessary, adjusted to provide ¾″ up or down movement from normal position at a point midway between fan and generator pulleys (fig. 41).

The system should be thoroughly checked for leaks. Tighten all hose clamps occasionally.

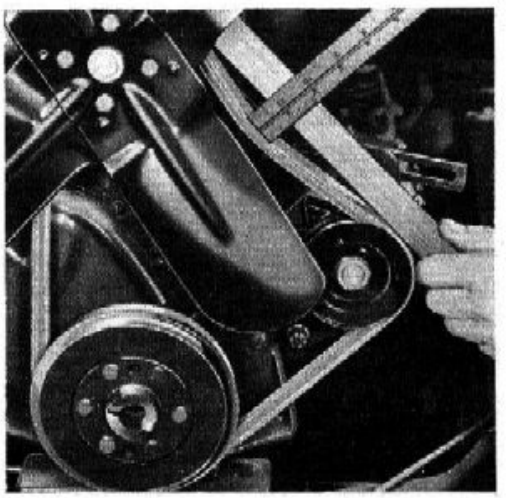

Fig. 41—Fan Belt Adjustment

Twice a year the radiator and cylinder block drain cocks should be opened and all coolant removed. Using a water hose the cooling system should then be thoroughly flushed until the water runs clear. Then close drain cocks and refill cooling system.

The front of the radiator core should be checked occasionally for bugs, leaves, etc., which would restrict air circulation. These can be flushed out from the back side of radiator with an ordinary water hose and city water pressure.

Maintenance—

Flushing. Scale and deposits in the cooling system which will not flush out can generally be removed by using a good cooling system cleaning compound. When using a cleaning compound in the cooling system it is advisable to follow the instructions furnished with the particular brand of compound.

If cooling system cleaning compound will not thoroughly clean the system it is advisable to reverse-flush the system.

Thermostat. A faulty thermostat may cause abnormally high or abnormally low engine temperature. If the condition of the thermostat is questioned it can be removed and tested as follows:

1. Open radiator drain cock and drain out about half the coolant, which will bring the coolant level below the thermostat; close drain cock.
2. Loosen upper hose clamps and remove hose.
3. Remove the two cap screws that attach the water outlet to the thermostat housing. Remove water outlet, gasket and thermostat.
4. Heat a container of water to a temperature 25° above the temperature stamped on the thermostat and place thermostat in the water and see if it opens fully.
5. Place thermostat in water 10° below the temperature stamped on thermostat and see if thermostat fully closes.
6. If the thermostat does not fully open on test in Item 4 or fully close on test in Item 5, it should be replaced.
7. Place thermostat in housing, install water outlet using a new gasket, install attaching screws and tighten them evenly and securely.
8. Inspect the upper hose and if necessary replace it. Install the hose and tighten hose clamps securely.
9. Fill cooling system and check it for leaks.

Fan Belt. When the fan belt becomes damaged it can be replaced as follows:

1. Loosen generator to engine brace clamp bolt at the generator end and generator attaching bolts and push generator assembly toward engine as far as it will go.

2. Work the belt off generator and crankshaft pulleys, push belt toward radiator and turn the fan so that the fan blades will turn through the belt. When the fan blades have all been turned through the loop of belt, the belt can be pulled through between fan hub and radiator core.

3. Thread the new belt over the fan and onto the crankshaft, generator and fan pulleys.

4. Pull the generator away from engine to tighten the belt. Tighten the brace to generator clamp bolt and check for ¾" total up or down movement of belt at a point midway between water pump and generator pulleys (fig. 41). If necessary loosen clamp bolt and move generator slightly to obtain desired belt tension then tighten generator attaching bolts.

Water Pump. If it should be necessary to replace the water pump it may be done as follows:

1. Drain the cooling system and remove the fan belt as instructed above.

2. Remove the cap screws attaching the fan blades to pump, and remove the fan.

3. Loosen clamp and disconnect hose from pump. Disconnect heater hose if one is attached to water pump.

4. Remove the cap screws that attach pump to cylinder block and remove pump.

5. Place new gasket in position, place pulley on pump shaft flange and install pump. Tighten bolts securely.

6. Place fan in position on pulley and install attaching bolts.

7. Connect hose to fitting on pump and if heater is used, transfer heater fitting from old pump and connect heater hose.

8. Install and adjust fan belt as instructed under "Fan Belt Replacement."

9. Fill cooling system and check for leaks.

Anti-Freezing Solutions

In selecting an anti-freezing solution for winter operation the local conditions and the type of service should be considered. The following information is given to assist the truck owner in selecting the anti-freezing solution best suited to meet his own individual driving conditions.

The available commercial materials which may be used for preparing anti-freezing solutions are denatured alcohol, methanol, propanol, ethylene glycol, and distilled glycerine.

Kerosene or other oils, or solutions containing calcium chloride, magnesium chloride, sodium silicate or other inorganic salts, honey, glucose or sugar are not satisfactory for use in the cooling system.

Alcohol. Denatured alcohol and methanol are used extensively for anti-freezing solutions. The various types of alcohol anti-freeze afford protection against freezing and have the advantage of wide distribution and low first cost.

There are, however, two important disadvantages. Alcohol is lost, especially on warm days and on hard driving, and, unless the solution in the radiator is tested periodically and sufficient alcohol added to replace the loss, the engine or radiator, or both, are likely to be damaged by subsequent freezing. The vehicle finish is softened and damaged by contact with alcohol solutions or vapors. Alcohol accidentally spilled on the finish should be flushed off immediately with a large quantity of cold water without wiping or rubbing.

The use of an overflow tank, connected to the overflow pipe of the radiator, serves to condense and trap vapor or liquid that would otherwise be lost. On cooling, the condensate or liquid is returned to the radiator. The surge or overflow tank is particularly useful when alcohol anti-freeze is used, and especially in territories where the atmospheric temperature fluctuates over a wide range during the winter months.

GM METHANOL PROTECTION TABLE

Cooling System Capacity In Quarts	Quarts of GM Methanol Required for Anti-Freeze Protection at Temperatures shown below								
	2	3	4	5	6	7	8	9	10
15	21°	13°	5°	−5°	−17°	−30°	−45°		
*16	21°	15°	7°	−2°	−12°	−24°	−38°	−52°	
17.5	23°	17°	10°	2°	−7°	−17°	−28°	−41°	−52°
*18.5	23°	18°	12°	5°	−3°	−13°	−23°	−35°	−46°

See Page 98 for cooling system capacity.

*A Hot Water Heater adds about one quart to Standard System Capacity.

Other alcohol and methanol anti-freeze should be used in accordance with instructions issued by the anti-freeze manufacturer.

Ethylene Glycol. Ethylene glycol is, in first cost, more expensive than alcohol. Ethylene glycol anti-freezing solutions have the distinct advantage of possessing a somewhat higher boiling point than alcohol anti-freezing solutions and, consequently, may be operated at a higher temperature, resulting in a more effective performance of the heater.

Ethylene glycol has the further advantage that in a tight system only water is required to replace evaporation losses. However, any solution lost mechanically through leakage or foaming must be replaced by additional new solution. Under ordinary conditions ethylene glycol solutions are not injurious to the vehicle finish.

"GM Ethylene Glycol" is especially treated and compounded for use in the cooling system. Other ethylene glycol preparations are available, but only those containing suitable corrosion inhibitors and compounded for use in automotive cooling systems should be used.

GM ETHYLENE GLYCOL PROTECTION TABLE

Cooling System Capacity in Quarts	Quarts of GM Ethylene Glycol Required for Anti-Freeze Protection at Temperatures shown below							
	3	4	5	6	7	8	9	10
15	16°	8°	0°	−12°	−26°	−43°		
*16	17°	10°	2°	−8°	−19°	−34°	−52°	
17.5	19°	13°	6°	−2°	−12°	−24°	−38°	−52°
*18.5	20°	15°	8°	1°	−8°	−18°	−31°	−46°

See Page 98 for cooling system capacity.

*A Hot Water Heater adds about one quart to Standard System Capacity.

Other ethylene glycol anti-freezes should be diluted in accordance with the instructions issued by the anti-freeze manufacturer.

Glycerine. Radiator glycerine, which is chemically treated, in accordance with the formula approved by the Glycerine Pro-

ducers' Association, to avoid corrosion, is satisfactory for use in the cooling system.

Servicing the Cooling System. Before installing anti-freezing solution, the cooling system should be inspected and serviced for winter operation. The system should be thoroughly cleaned and all loose scale and iron rust removed.

Cylinder head bolts should be tightened to avoid the possibility of anti-freezing solutions leaking into the engine or exhaust gas blowing into the cooling system. Anti-freeze, or water, mixed with engine oil may form sludge, which will interfere with lubrication and, in some cases, may form varnish-like deposits which will cause gumming and sticking of the moving parts.

NOTE: Tightening cylinder head bolts may decrease valve clearance. Check and adjust valves if necessary (See Valve Adjustment).

It may be advisable to install new radiator and heater hose, especially when ethylene glycol or glycerine anti-freezing solutions are used. Ethylene glycol and glycerine have a tendency to shrink rubber that previously has been swollen by the absorption of water, and leaks may develop.

The water pump seal must be leak tight, not only to avoid loss of liquid, but to prevent air from being drawn into the cooling system. Aeration of the cooling liquid causes foaming and promotes oxidation which may result in serious corrosion.

After the anti-freezing solution has been installed, the entire system, including the hose connections, cylinder head gasket and pump, should be inspected regularly to insure that no leaks have developed.

The use of additional rust preventives, or inhibitors, is not recommended with "GM Anti-Freeze," "GM Ethylene Glycol," or with other anti-freeze preparations that have been chemically treated or compounded for use in automotive cooling systems.

Loss of Anti-Freezing Solutions. Anti-freeze, or water, or both may be lost from the cooling system through leaks, evaporation, boiling, foaming, or expansion. Loss through excessive evaporation or boiling may be caused by impaired circulation or through the use of a high temperature thermostat.

Loss by expansion is a result of overfilling. In the average

cooling system, the anti-freezing solution expands approximately 2 pints on heating from 30° to 160° F., and a corresponding space should be left when adding liquid to the radiator.

A hydrometer test will indicate whether anti-freeze, or water, or both should be added to bring the solution to the proper level and to maintain the desired freezing point.

Testing. Some devices, used for testing anti-freezing solutions, will indicate the correct freezing point only when the test is made at a specific temperature. Other testers, provided with thermometers and tables, indicate the freezing points corresponding to readings made at various temperatures (fig. 42). Disregarding the temperature of the solution, when tested, may cause an error as large as 30° F.

Fig. 42—Anti-Freeze Tester

Some testing devices are made to test only one kind of anti-freezing solution. Others have several scales and may be used for the corresponding kinds of anti-freeze.

The freezing point of a solution containing both alcohol and ethylene glycol cannot be determined accurately by means of a hydrometer.

CLUTCH

Description. The clutch, which provides a means of disconnecting the engine from the transmission while shifting gears, is of the single plate dry disc type. It consists of a pressure plate, cover, disc with facings, diaphragm type spring, throwout bearing, throwout fork and small correlated parts.

When the clutch pedal is depressed the throwout fork pushes the throwout bearing forward, which moves the clutch spring fingers forward, causing the outer rim of the clutch spring to move backward releasing the clutch.

Care. The Chevrolet clutch requires very little care or attention; however, proper use of the clutch will contribute materially to the carefree service it will render.

Never drive with the foot resting on the clutch pedal as this causes constant wear on the clutch throwout bearing and may cause slight clutch slippage which will cause premature failure of the parts.

The clutch pedal free travel should be checked at regular intervals by pushing the clutch pedal down with the fingers to determine the distance it moves before the throwout bearing engages the clutch diaphragm spring. This free travel should be ¾" to 1" (fig. 43). If adjustment is necessary, follow instructions below.

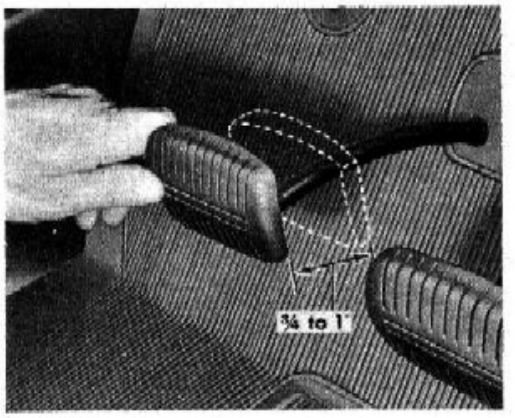

Fig. 43—Clutch Pedal Free Travel

Maintenance—

Clutch Pedal Adjustment. Push the clutch pedal down with the fingers and note the amount of pedal free travel. If this free travel is more than 1" or less than ¾" adjustment should be made.

Loosen the lock nut "A" (fig. 44) on clutch release rod and back off the adjusting nut "B" to increase the pedal free travel, or tighten the adjusting nut "B" to decrease the pedal free travel. When correct travel is obtained, tighten the lock nut "A" and recheck the pedal free travel.

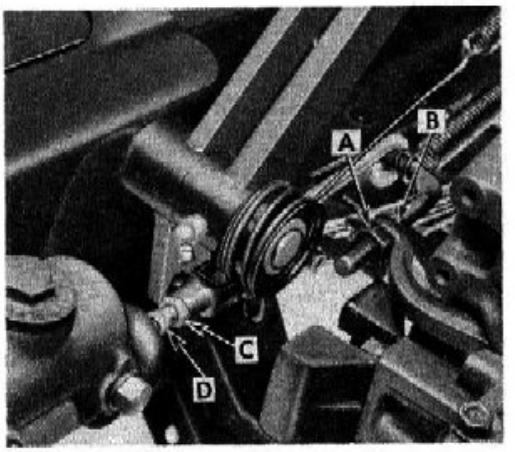

Fig. 44—Clutch and Brake Pedal Travel Adjustment

TRANSMISSION

Description (3-Speed Transmission). The sturdy synchro-mesh transmission with steering column gear shift control used as standard equipment on the ½ and ¾ ton models provides

three forward speeds and reverse. It is of helical gear type providing unusually quiet operation in all gears.

The gears are carburized for additional strength and long life. The countergear is mounted on roller bearings. Ball bearings are used on the clutch gear and mainshaft.

Description (4-speed Transmission). This sturdy synchro-mesh transmission has increased durability and has synchro-mesh action into second, third and fourth speeds using helical gears, affording quieter operation and longer life.

The gears are drop forged steel, heat treated for strength and long life. The clutch gear is supported in the case on a ball bearing and the mainshaft is piloted at the front on roller bearings in the clutch gear and supported in the case at the rear by a large ball bearing. The countershaft is mounted at the front in a roller bearing and at the rear in a large ball bearing.

Care. Chevrolet transmissions require very little care or maintenance. The lubrication level should be checked at regular intervals and lubricant added as necessary. (See instructions in the Lubrication Section.)

Propeller Shaft and Universal Joints

Description. The ½ ton models use one universal joint directly back of the transmission and a torque tube enclosed tubular propeller shaft that is splined to the pinion shaft. The universal joint is of the fully enclosed bushed type taking its lubrication from the transmission.

The ¾ ton models use two propeller shafts and three universal joints. The front universal joint is of the fully enclosed bushed type and is lubricated from the transmission. The front propeller shaft is enclosed in a propeller shaft housing. A propeller shaft bearing support assembly is located near the rear end of this shaft and gives the drive line the necessary support. This bearing support assembly is permanently lubricated at assembly and requires no further lubrication. The center and rear universal joints are of the needle bearing type. They are open joints with a single lubrication fitting to provide lubrication to all trunnion bearings through the drilled trunnion. The rear propeller shaft is of tubular construction.

All other models are fitted with tubular propeller shafts and needle bearing type open universal joints having a single lubrication fitting at each joint and drilled trunnions to distrib-

ute lubricant to all trunnion bearings. The short wheelbase C.O.E. has but one drive shaft and two universal joints, while the 2 ton 179" wheelbase model and the long wheelbase school-bus chassis have three propeller shafts and four universal joints. All other models have two propeller shafts and three universal joints.

Care. When the universal joints are lubricated regularly as instructed in the lubrication section of this manual, they will require very little other care or maintenance. The open type universal joint "U" bolt nuts should be checked occasionally to make sure they are tight.

REAR AXLE

Description (½-Ton). The ½ ton rear axle is of the semi-floating hypoid gear type. The pinion shaft is supported by a large roller bearing at the pinion end and a heavy double row ball bearing at the front end. This ball bearing takes the thrust load. The differential is mounted in the carrier on two barrel type roller bearings. A sturdy two pinion differential is used. The axle shafts are supported on roller bearings in the end of the housing. The shafts are locked in place by "C" locks which fit in grooves on the inner ends of the shafts and a thrust block between the ends of the two shafts.

Description (¾, 1, 1½ and 2 Ton). These models all use a sturdy full floating rear axle having straddle mounted pinion bearings, a four pinion differential and hypoid ring gear and pinion. An adjustable thrust pad is placed back of the ring gear in line with the pinion to avoid any possibility of distortion when starting under heavy loads. The differential is mounted in heavy duty barrel type roller bearings. The bearing caps are piloted to the carrier by sleeve dowels to provide additional rigidity.

Description (2-Speed Axle). The two-speed axle is of the double reduction type having a hypoid ring gear and pinion for the first reduction (fig. 45). The ring gear is mounted on a double reduction shaft having a high speed and a low speed floating reduction pinion that meshes with a respective high and a low speed reduction gear that is bolted to the differential case. An internal splined shifter sleeve fits on splines at the center of the double reduction shaft and can be shifted in either direction to engage splines on the reduction pinions to lock

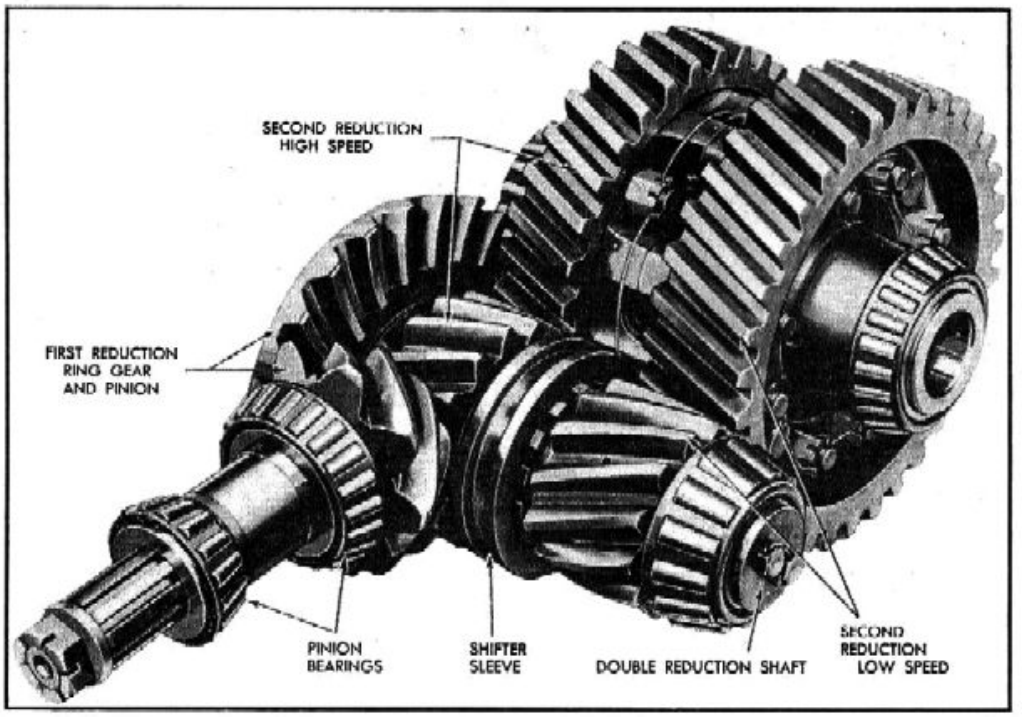

Fig. 45—Two-Speed Axle

one of the pinions to the reduction shaft, thereby providing a positive drive in either high or low gear. The shifting of the shifter sleeve is accomplished by a vacuum shift unit mounted on the left side of differential carrier and controlled by a valve at the lower edge of the instrument panel.

Care. The rear axles used on Chevrolet trucks require very little care or attention. The lubricant level should be checked at each chassis lubrication and the differential carrier and inspection plate bolts should be kept tight.

The axle flange to hub bolts on ¾ and 1 ton trucks should be kept properly tightened. If these bolts are found loose and grease has worked out between hub and axle flange, the safe way to avoid further trouble is to perform the following operations.

1. Remove axle flange bolts, bolt lock, axle shaft and flange gasket.

2. Clean the end of hub and axle flange carefully to remove all trace of grease at the hub to axle shaft mating flange.

3. Install a new metal gasket and the axle shaft. **Make sure gasket and mating flanges are clean and dry.**

4. Install the flange bolts and lock washers and tighten bolts to 85 to 90 foot pounds torque.

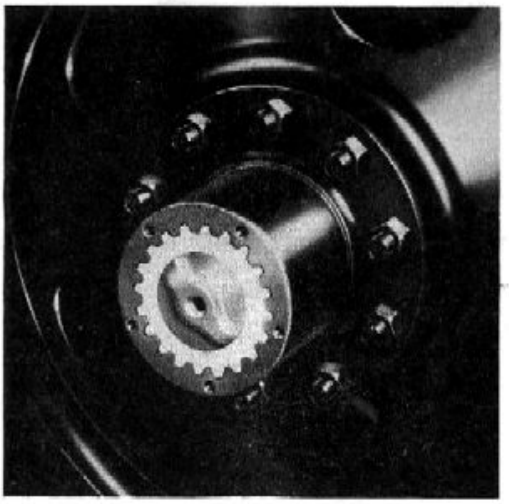

Fig 46—Shaft to Hub Adjustment

On all 1½ and 2 ton trucks the axle shaft is spline attached to the wheel hub (fig. 46). External splines on the outer diameter of the shaft flange mesh with internal teeth in the hub. The shaft is retained in the hub by a hub cap. Should leakage occur simply remove hub cap, clean mating faces, install new gasket, replace hub cap and tighten hub cap retaining bolts securely.

Rear Wheels and Bearings

Description. All models are equipped with demountable steel disc wheels. They are held securely on the axle flange or hub flange with special bolts and nuts. All models except the half ton have the wheel hub mounted on the outer end of axle housing with two large barrel type roller bearings. An adjusting nut which screws onto the end of axle housing provides a means of adjusting the bearings. The ½ ton semi-floating axle has the wheel bolted directly to the axle flange, the bearing is in the outer end of the axle housing and rides on a special race on the axle shaft just back of the axle flange.

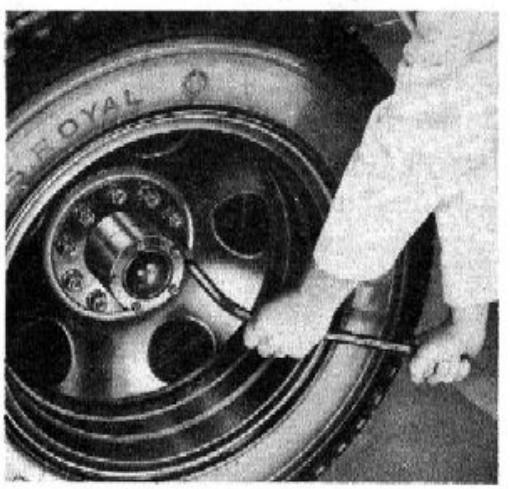

Fig. 47—Tightening Wheel Nuts

Care. Keep the wheel to hub or axle flange bolt nuts securely tightened (fig. 47). In case the hub flange or wheel disc should become coated with oil or grease the wheel should be removed and all grease removed with cleaning solvent. Reinstall wheel and tighten bolts securely.

FRONT AXLE

Description. All Chevrolet trucks use what is known as a reverse Elliott type "I" beam axle. The drop forged steel "I" beam has the spring seats forged integral with the "I" beam

Floating bushings are used between the kingpin and knuckle on the ½ ton models. Other models have the bushings pressed into the steering knuckles. The steering arms bolt to the knuckles.

Care. The front axle and its connections should be checked regularly for wear or looseness, especially for loose spring to axle "U" bolts, loose steering tie rod and drag link joints and for bent tie rod, drag link or steering arms.

Alignment. To provide easy steering, normal tire life and road stability and to prevent such troubles as shimmy, wander, tramp and tendency to lead to right or left, it is necessary to maintain correct front end alignment.

Since considerable expensive special equipment is required to properly check and adjust all the factors of front end alignment, it is advisable to take the truck to a Chevrolet dealer for this service, when the front end alignment requires attention.

Front Wheels and Bearings

Description—All Chevrolet trucks are equipped with demountable steel disc front wheels. The ½-ton and ¾-ton use one-piece drop center wheels, while the other models use a removable tire lock ring. The wheels are attached to the hub with special bolts and nuts. The hubs on the 1½ ton school bus, C.O.E. and 2 ton heavy duty models are mounted on the spindle with barrel type roller bearings. The hubs on all other models are mounted on ball bearings.

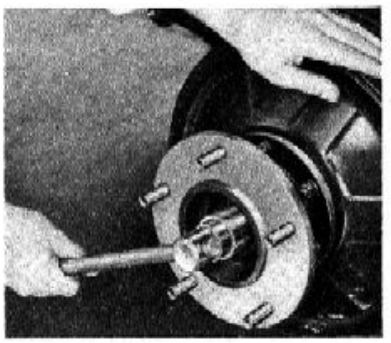

Fig. 48—Adjusting Front Wheel Bearings

Care. Keep the wheel to hub mounting bolt nuts tight and the wheel bearings properly adjusted as instructed below.

Wheel Bearing Adjustment. 1. Jack up front end of vehicle and remove wheel and tire assembly. Remove hub cap and dust cap or the plate from end of hub. Remove cotter pin from end of spindle.

2. Using an 8" wrench (never larger) and applying a steady force with one hand, pull the adjusting nut up tight while rotating the drum to make sure all parts are correctly seated (fig. 48).

3. Back off the adjusting nut one-half castellation or one-twelfth turn.

4. If the cotter pin will enter the horizontal or vertical hole in the spindle, install it; however, if a castellation in the nut does not line up with either hole, back the nut off slightly until the nearest castellation lines up with a hole in the spindle.

5. Spin the drum to make sure that it rolls freely. Install and properly lock the cotter pin by spreading the end and bending it around. Install the hub plate or dust cap and hub cap. Replace wheel and tire assembly and remove jack.

STEERING GEAR

Description. The modern, heavy-duty recirculating ball type steering gear used on Chevrolet trucks is designed for easy steering and road stability. The steering gear reduction is 26.24 to 1 on all trucks except Forward Control, 1½-ton school bus and 2-ton models. Forward Control models have a reduction of 19.8 to 1 while the 1½-ton school bus and all 2-ton have a reduction of 27.76 to 1.

The wormshaft is supported in the steering gear housing on barrel type roller bearings. The ball nut is mounted on the worm with two sets of recirculating ball bearings.

The design of the steering gear makes it possible to adjust all backlash from the steering gear when the wheels are in a straight ahead position. When the wheels are turned in either direction there will be slight backlash. This construction makes it possible to make adjustments to compensate for wear in the straight ahead position without causing a bind when turning to right or left. These construction features contribute materially to easy steering and long steering gear life.

Care. Check the steering gear to frame bolts regularly to make sure they are tight. Keep the pitman arm to pitman shaft nut tight. Keep the housing side and end covers tight to prevent grease leak and steering looseness. Add lubricant when necessary.

Steering Gear Adjustment. Steering gear adjustment is a very important operation and requires the use of a special checking scale; therefore, it is suggested that this service be performed by a Chevrolet dealer.

BRAKE SYSTEM

Description. The self-energizing type braking system used on all Chevrolet trucks combines hydraulically operated serv-

ice brakes with mechanically operated parking brakes. Functionally, the braking systems used on all truck models are the same; however, they vary somewhat in type, size and braking area due to the difference in vehicle weight and load capacity.

The hydraulic service brakes provide brake action at all four wheels, while the mechanical parking brakes operate on the rear wheels of all truck models except the 1½ and 2 ton which are equipped with a propeller shaft brake.

The service brake system consists of the brake pedal, main cylinder, brake lines to all wheels, wheel cylinders, shoes with linings and brake drums. The parking brake on all models except 1½ and 2 ton, consists of the brake lever or pedal, pull rods, cables and the toggle at the wheels which actuates the brake shoes.

Parking brake on 1½ and 2 ton consists of the brake lever, bell cranks, pull rod, brake drum attached to the transmission drive flange and an internal and external brake shoe.

The hydraulic system must be kept full of fluid at all times in order to function properly. The main cylinder includes a reservoir for a reserve supply of fluid. This automatically keeps the system full of fluid as long as there is a reserve supply in the reservoir. Should the reservoir become empty or the hydraulic system be opened at any point, air will enter the system and affect the efficiency of the brakes. When this occurs the hydraulic system must be bled. See "Bleeding Hydraulic System."

Care. The Chevrolet braking system requires very little care; however, the system should be checked occasionally for indications of fluid leak. If leaks are found the necessary repairs should be made at once.

Fig. 49—Hydraulic Brake Main Cylinder Location

The main cylinder inspection plug in the left side of floor board should be removed and the top of main cylinder cleaned carefully (fig. 49). The filler cap should be removed and if the fluid is low in the reservoir, it should be filled to

a point about ¼" from the top of reservoir with G. M. Super No. 11 Hydraulic Brake fluid. Check the filler cap to see that the vent holes are open. Install filler cap and inspection plug.

Bleeding Hydraulic System

Only G. M. Hydraulic Brake Fluid Super No. 11 should be used when bleeding brakes. This brake fluid is satisfactory for any atmospheric temperature, hot or cold, and has all the qualities necessary for satisfactory operation, such as a high boiling point to prevent evaporation and tendency to vapor lock and still remain fluid at low temperatures.

The hydraulic brake system must be bled whenever a pipe line has been disconnected, when a leak has allowed air to enter the system or at any time the system has been opened. For satisfactory brake operation the system must be completely free of all air.

Bleeding which may be accomplished by one of two methods; Pressure or Manual, on all models except 1951, 1½ and 2 ton, should be done on the longest line first, the proper sequence being left rear, left front, right rear and right front.

Pressure Bleeding (Except 1951, 1½ and 2 Ton)

1. Clean all dirt from top of main cylinder and remove filler plug.

2. Connect hose from bleeder tank to main cylinder filler plug opening and open valves at both ends of hose.

NOTE: Make sure fluid in tank is up to petcock above outlet and that tank is charged with 20 pounds air pressure.

3. Remove bleeder valve screw and screw bleeder hose into bleeder valve, placing other end of hose in a container having sufficient fluid to cover end of hose.

4. Open bleeder valve by turning ¾ turn in a counterclockwise direction and watch flow of fluid at end of bleeder hose.

5. Close bleeder valve tightly as soon as bubbles stop and fluid flows in a solid stream.

6. Remove bleeder hose and install bleeder valve screw in bleeder valve.

7. Repeat above operations at each wheel.

Manual Bleeding (Except 1951, 1½ and 2 Ton)

1. Clean all dirt from top of main cylinder and remove filler plug.

2. Install adapter and automatic filler J-713.

3. Follow bleeding operations as outlined in Steps 3 through 7 under "Pressure Bleeding."

Pressure Bleeding (1951, 1½ and 2 Ton)

To bleed the hydraulic system on 1951, 1½ and 2 ton trucks a pressure bleeder tank should be used and in accordance with the following procedure:

1. Back off adjustment all the way on the upper shoe on both rear wheels.

2. Remove filler cap from main cylinder and fill the reservoir to the top of filler plug opening.

3. Connect pressure bleeder to main cylinder and open valve in the bleeder tank line.

NOTE: The bleeder tank should be pumped up to 20 pounds pressure and kept at approximately this pressure during the bleeding operation. The end of the bleeder tube must be in a bleeder jar or bottle and covered with fluid while performing all bleeding operations.

4. Connect bleeder tube to hydrovac slave cylinder, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

5. Connect bleeder tube to hydrovac valve bleeder valve, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

6. Connect bleeder tube to the rear, rear wheel cylinder on

left side, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

7. Connect bleeder tube to the front, rear wheel cylinder on left side, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

8. Connect bleeder tube to left front wheel cylinder, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

9. Connect bleeder tube to the rear, rear wheel cylinder on the right side, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

10. Connect bleeder tube to the front, rear wheel cylinder on the right side, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

11. Connect bleeder tube to the right front wheel cylinder, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

12. Connect bleeder tube to hydrovac slave cylinder, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

13. Connect bleeder tube to hydrovac valve bleeder valve, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

NOTE: It is important to bleed the hydrovac both before and after bleeding the wheel cylinders.

14. Adjust upper shoe on each rear wheel.

15. Push down hard on the brake pedal several times to centralize the shoes, then readjust all brake shoes.

16. Apply approximately 75 pounds pressure on the brake pedal and check the pedal clearance from the toe board to the forward edge of the pedal pad. This clearance should be a minimum of 3½ inches with the floor mat in place.

If the pedal clearance is less than 3½ inches the hydraulic system should be re-bled in accordance with the foregoing procedure.

Maintenance—

Brake Adjustment (½ ton front and rear).

1. Raise truck until wheels rotate freely.

2. Disconnect parking brake cables from parking brake cross shaft outer levers. This precaution should be taken to eliminate possibility of brake shoes dragging in drum due to misadjustment of parking brake cables.

3. Remove adjusting hole covers from flange plate on all four wheels. Expand brake shoes by turning adjusting screw until a light drag is felt on the brake drum (fig. 50), then back off adjusting screw 14 notches and replace adjusting hole covers.

4. After foot brakes are adjusted, adjust parking brake. See "Parking Brake Adjustment," page 54.

5. Lower truck to floor and test brakes.

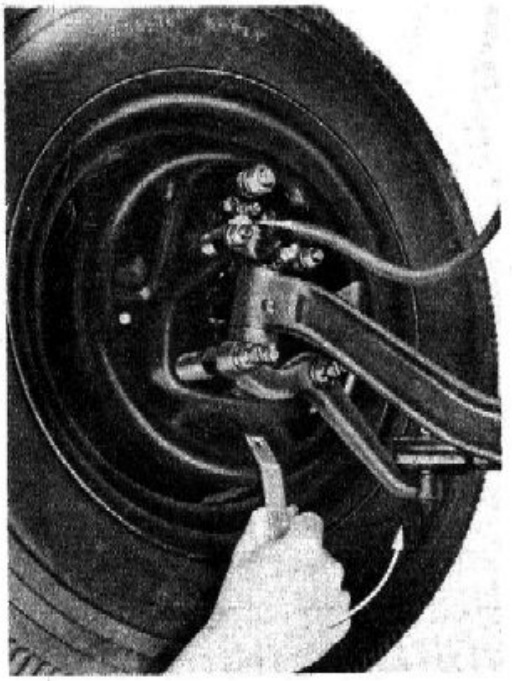

Fig. 50—Adjusting Brakes—½ Ton

Brake Adjustment. (¾ ton front and rear, 1, 1½ and 2 ton front). When the brake pedal can be pushed nearly to the toeboard, brake adjustment is needed.

1. Raise the truck and place stand jacks front and rear so that all four wheels rotate freely.

2. Disconnect the parking brake cables at the cross shaft lever. This precaution should be taken to eliminate the possibility of the brake shoes dragging the drum due to misadjustment of the parking brakes.

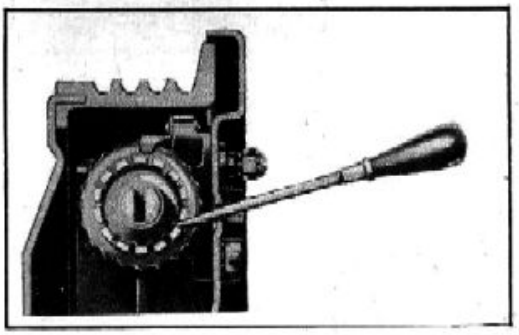

Fig. 51—Adjusting Brakes

3. Remove the adjusting hole covers and insert a screwdriver through the adjusting hole and engage the teeth on the adjusting cover of the wheel cylinder (fig. 51). Turn the adjusting cover in a clockwise direction looking at the end of the cylinder until the shoes cause a slight drag on the brake drum.

4. When the "drag" condition is reached, turn the adjusting cover in the opposite direction five (5) notches. Repeat this operation on each shoe in each brake.

NOTE: The backing-off of the adjusting cover the specified number of notches will be indicated by a faint click of the cover lock spring as the cover is turned. This backing-off of the adjusting cover moves the brake shoe away from the drum to insure proper running clearance of the shoes in the drum.

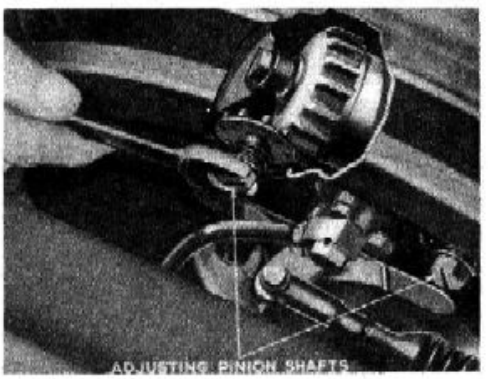

Fig. 52—Adjusting 1-Ton Rear Brakes

5. Connect parking brake cables and adjust. (See Parking Brake Adjustment.)

Brake Adjustment (1 ton rear).

To adjust the rear brakes, use a ⅝" open end wrench to turn the adjusting pinion.

1. Raise rear of truck so wheels clear floor.

2. Turn the adjusting pinion (fig. 52), in a clockwise direction until the shoe causes a slight drag on the brake drum.

3. Turn the adjusting pinion back in the opposite direction ⅔ of a turn to provide running clearance. Repeat this operation on each shoe in each brake. Lower truck to floor.

Brake Adjustment (1½ and 2 ton rear).

1. Jack rear wheels clear of floor and remove adjusting hole covers from flange plate (two at each wheel).

2. Turn rear adjusting screw until a moderate dragging contact is felt on the brake drum and then back off 3 notches.

NOTE: Moving outer end of adjusting tool toward center of wheel expands shoe.

3. Turn front adjusting screw until a light dragging contact is felt on the brake drum and then back off 3 notches.

4. Install adjusting hole covers.

5. Repeat above operations on the other rear wheel and lower rear of truck to floor.

Parking Brake Adjustment (All except 1½ and 2 ton). The parking brake adjustment should be checked after each service brake adjustment.

1. Jack up rear wheels and set the parking brake lever or pedal in the fully released position.

2. Loosen the check nuts at the cable ends, or remove the adjusting clevis to pull rod clevis pins and loosen lock nut, depending on truck model.

3. On ½ ton, with foot pedal in fully released position, adjust brake pedal pull rod clevis to give ⅛" clearance between cross shaft and frame cross member at center.

4. On ½ ton, depress foot pedal 1½".

5. Pull the cables out of the conduits by hand until a positive stop is felt. Hold the cable in this position and turn the check nuts to remove all slack from cable or turn the clevis until it is the correct length for the pin to pass through clevis and cable end.

6. Apply the parking brake enough to produce a drag at the wheels and check for equal drag at each wheel. If one wheel has more drag than the other, loosen the parking brake adjustment of the tight wheel until they are equal. Release brake lever and check to see that the brakes do not drag.

7. Tighten the adjusting nuts to maintain correct adjustment or install clevis pin cotter pins and tighten lock nuts on models using this type connection.

Parking Brake Adjustment (1½ and 2 ton).

1. Set hand brake lever in the fully released notch of the ratchet sector.

2. Loosen lock nut "D" and draw up adjusting bolt "A" (fig. 53) to secure clearance between outer shoe facing and brake

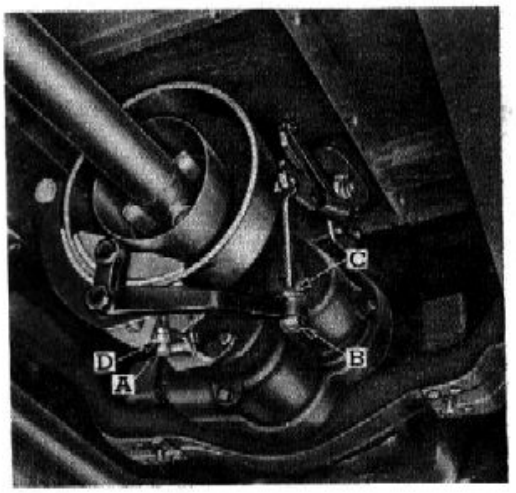

Fig. 53—Propeller Shaft Brake

drum of .010"-.015" measured at a point directly above bolt "A". Then hold bolt and tighten lock nut securely.

3. Loosen lock nut "C" and draw up nut "B" to secure .010"-.015" clearance between inner shoe facing and brake drum. Then hold nut "B" and tighten lock nut "C" securely.

4. Recheck both facing-to-drum clearances.

Brake Pedal Clearance. Should be checked and adjusted as follows, when necessary.

1. Brake pedal should be adjusted to give $^{13}/_{16}$" clearance between top of pedal arm and underside of brake pedal toe pan depression.

2. Loosen check nut "C" (fig. 44) at rear of clevis on main cylinder push rod "D".

3. Turn main cylinder push rod "D" by knurled portion ahead of boot, in the proper direction, to secure desired clearance.

4. Tighten check nut "C" against the clevis.

Hydrovac Power Brakes

Description. The Hydrovac is standard equipment on the 2-ton and 1½-ton special models and is also available as optional equipment on ¾ and 1 ton and 1½ ton regular models. This self-contained unit is connected in the hydraulic brake system between the brake main cylinder and the lines leading to the wheel cylinders.

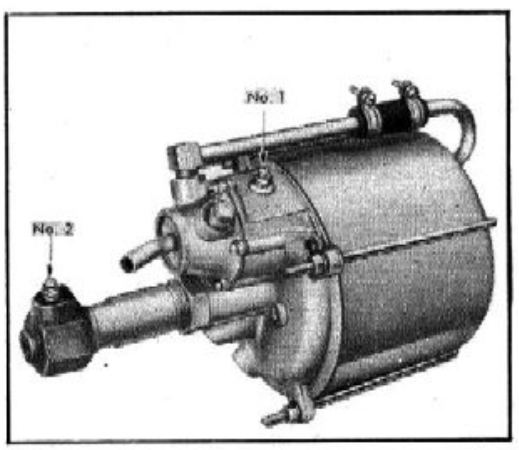

Fig. 54—Hydrovac

The Hydrovac (fig. 54) consists of three operating units built into one assembly;

namely, the control valve assembly, the vacuum power cylinder and the brake hydraulic cylinder.

With this system the engine vacuum is used to greatly increase the hydraulic pressure to the brake wheel cylinders. This provides unusual braking efficiency with comparatively light pedal pressure.

Care. This unit does not have any external moving parts or linkage and is properly sealed against dust and water; therefore, it will give unusual service with very little care or maintenance. Lubricate the vacuum cylinder according to instructions in the Lubrication Section.

The vacuum connections between the engine and the hydrovac should be checked for damage and the connections tightened occasionally. The hydrovac air cleaner should be removed, disassembled, cleaned and oiled at least twice a year and more frequently when driving on dusty roads.

SPRINGS AND SHACKLES

Front Springs and Shackles

Description. All Chevrolet trucks use leaf type front springs. The ½ and ¾ ton use an 8-leaf spring 38″ long and 1¾″ wide. The thickness of the leaves vary between the two models. The ¾ and 1 ton Forward Control units are equipped with 8 leaf springs, 39⅞″ long and 2″ wide. All other models use 40″ springs, 2″ wide with from 7 to 11 leaves. All models except the Cab-Over-Engine and Forward Control have a threaded bushing and pin type shackle at the front and a plain bushing and bolt at the rear hanger. The C.O.E. and Forward Control models have the shackle at the rear and the fixed hanger at the front.

Care. The spring to "I" beam U-bolts should be checked occasionally to make sure they are tight. The shackles and hanger bolts should be checked for proper tightness. The shackles and hanger bushings should be lubricated as instructed in the Lubrication Section.

Rear Springs and Shackles

Description. All models have leaf type rear springs with the shackle at the rear end of spring; however, the length, width

and thickness of the springs vary depending on model and capacity of the truck. The ½-ton uses a threaded type shackle while all other models use a clevis type shackle and heavy shackle pins to attach the spring to shackle and hanger.

Some models use a two-stage type rear spring to provide better riding qualities when lightly loaded and proper support for heavy loads. Some models that are to be subjected to heavy loads are equipped with auxiliary springs which mount above the regular springs and contact brackets on the frame member when handling heavy loads.

Care. Keep the spring to axle "U" bolts and the shackle bolts properly tightened. Lubricate the shackles and hangers according to instructions in the Lubrication Section.

ELECTRICAL SYSTEM

General Description. The electrical system consists of the following units—generator, combined voltage and current regulator, starting motor, storage battery, distributor, ignition lock, ignition coil, ammeter, gasoline gauge, horn, lamps, switches, wiring and miscellaneous parts.

The ignition switch, coil, distributor and other miscellaneous parts making up the "Ignition System" were previously covered.

Battery

Description. A 6-volt 100 ampere hour storage battery is located under the floor board on the right side of the vehicle on all models except the C.O.E., school bus and Forward Control units. Location is in engine compartment on school buses and Forward Control and under seat on C.O.E. All school buses have a 125 ampere hour battery under the hood while Forward Control units have a 100 ampere hour battery located on the frame at right side of engine.

Care. To assure long carefree battery service it is suggested that you register the battery with your dealer and take the vehicle to him to have the battery serviced. If this cannot be done

the following services should be performed at least once in two weeks.

1. Turn the right rear corner of floor mat up out of the way, turn the battery inspection plate handle counterclockwise (fig. 55) and remove inspection plate.

2. Remove filler caps from all three cells and add distilled water to bring the solution ¼" above the plates in each cell.

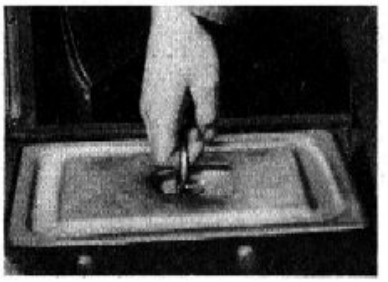

Fig. 55—Removing Battery Inspection Plate

NOTE: Avoid getting battery acid on clothing or other fabrics.

3. Reinstall and tighten filler caps, place battery inspection plate in position and turn the handle to lock it securely. Place floor mat in position.

In freezing weather the vehicle must be driven after adding water to properly mix it with the electrolyte and prevent freezing. It is also important to keep the battery in a fully charged condition in cold weather as a discharged battery will freeze at a little below the freezing point of water (32 degrees F.).

The state of charge in the battery should be checked regularly. Your Chevrolet dealer will gladly perform this service; however, if it is inconvenient to take the truck to the dealer the state of charge in the battery can be checked by using a battery hydrometer as shown in Fig. 56. The hydrometer reading of a fully charged battery will be from 1.275 to 1.300.

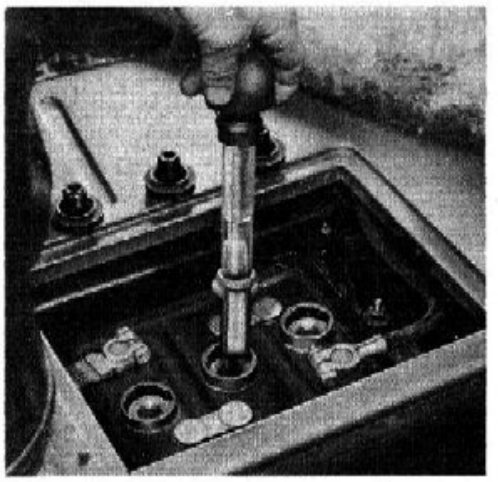

Fig. 56—Testing Battery with Hydrometer

Battery Cables

Care. The battery cable terminals must be kept clean and tight. Loose or corroded terminals cause hard starting and discharged batteries. When corrosion appears on the terminals they should be cleaned in a solution of baking soda and water or ammonia

and water. After cleaning, the top of the battery should be flushed off with clear water. To reduce the tendency of the terminals to corrode, coat them with petrolatum.

Starter

Description. The starting motor on all models except Forward Control units is designed to incorporate a manual shift drive mechanism which assures positive engagement of the starting motor pinion with the flywheel until the engine is started. Both the ¾ and 1 ton Forward Control units are equipped with a solenoid controlled starting motor operated by means of a starter button located on the dash.

Maintenance—

Keep the terminal nut tight on the starting switch. Check the switch mounting screws, solenoid mounting and starting motor bolts periodically to make sure they remain tight. Remove the commutator cover band every 5,000 miles and blow out any dust. If the commutator is dirty it may be cleaned with a strip of No. 00 sandpaper. **Do not use emery cloth.**

Generating System

Description. The generating system consists of the generator, voltage and current regulator, ammeter and necessary wiring.

The ammeter indicates whether current is being supplied to or removed from the battery.

The generator used on all Chevrolet trucks has sufficient capacity to supply all regularly used accessories and keep the battery fully charged providing the system is in good condition.

The generator output is controlled by the combined current and voltage regulator and circuit breaker. The circuit breaker points close when the generator voltage is higher than the battery voltage so that current can flow to the battery, and open when the generator voltage is lower than the battery voltage to prevent the battery from discharging through the generator.

The current regulator protects the generator by preventing the generator output from exceeding 32 to 40 amperes.

The voltage regulator protects the battery and electrical system by preventing the generator voltage from exceeding 7.0 to 7.7 volts.

Care. The connections in the entire generating circuit must be kept tight and free from corrosion or anything that will cause

high resistance in the circuit. The generator should be lubricated according to instructions in the Lubrication Section.

Maintenance—

The maintenance services on the generating system, especially the voltage and current regulator, require the use of special equipment not generally available to the vehicle owner.

NOTE: Never tamper with the voltage and current regulator unless you have special testing equipment and are trained to do this kind of work.

Remove the generator commutator cover band every 5,000 miles and blow out any dust. If the commutator is dirty it may be cleaned with a strip of No. 00 sandpaper. **Do not use emery cloth.**

If the brushes are badly worn or the generator does not respond to commutator cleaning it is best to have your Chevrolet dealer make the necessary tests and repairs.

Lamps

Description. All Chevrolet trucks are equipped with "Sealed Beam" headlight units in which the light source, the reflector, lens and gasket are all assembled in a securely sealed unit. Figure 57 shows the component parts of the light. With this

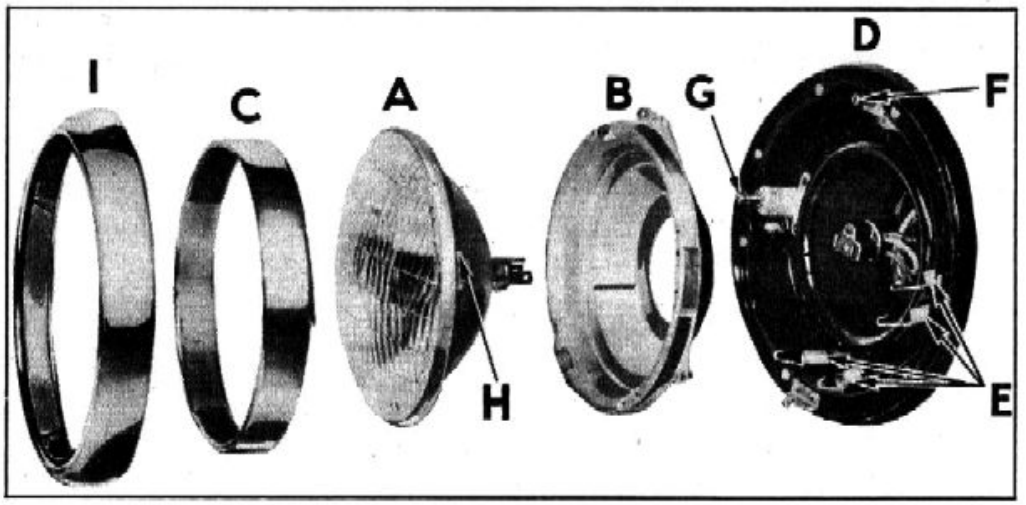

Fig. 57—Headlamp Parts

A. Sealed Beam Unit
B. Sub Body.
C. Retainer Ring
D. Lamp Housing
E. Coil Springs (4)
F. Vertical Adjustment Screw
G. Horizontal Adjustment Screw
H. Locating Lugs
I. Headlamp Rim

sealed unit dirt or moisture cannot enter the assembly; therefore, it retains its light reflecting ability indefinitely.

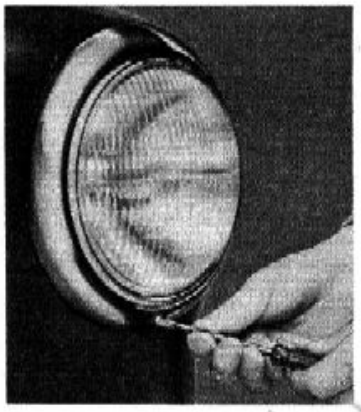

Fig. 58—Removing Headlamp Rim

Fig. 59—Removing Sealed Beam Retaining Ring Screws

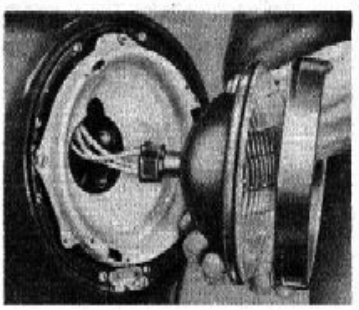

Fig. 60—Removing Sealed Beam Retaining Ring

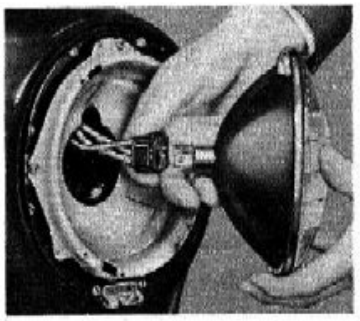

Fig. 61—Disconnecting Sealed Beam Plug Connector

Maintenance—

Sealed beam units can be replaced as follows.

1. Loosen clamp screw and remove headlamp door rim by pulling it out at bottom and unhooking the top (fig. 58).

2. Remove the three screws holding the sealed beam retainer ring (fig. 59).

NOTE: Do not disturb the headlamp adjusting screws on the top and left side of unit (fig. 59).

3. Pull the sealed beam and retainer ring away from lamp body and remove retainer ring (fig. 60).

4. Disconnect wiring plug from sealed beam unit (fig. 61).

5. Connect wiring plug to new sealed beam unit, place the retaining ring around unit, push the assembly into place and install the three attaching screws.

6. Hook the headlamp rim at the top and pull it down into place. Install and tighten the clamp screw.

Proper aiming of these powerful lights is most important to assure sufficient illumination of the highway without blinding other motorists. When light aiming is necessary it is advisable to contact a Chevrolet dealer who has special equipment for this purpose.

The parking, stop and tail lamp bulbs may be reached by removing the rim clamp screws, rim and lens. Push the bulb in slightly and turn it counterclockwise as far as possible and pull it out of socket. Push new bulb into place and turn it clockwise to lock it. Install rim and lens.

Lighting Switch

The lighting switch is mounted near the left end of instrument panel. All current entering the lighting switch passes through a 30 ampere thermal circuit breaker. If all lights fail to operate look for trouble at this circuit breaker, the light switch or the wiring between the battery and light switch. Tail and stop lamp circuits are protected by fuses located in a fuse box.

Fuse Box

Description. The fuse box on all models except Forward Control units is mounted on the left side of the cowl (fig. 62). Fuse box on Forward Control units is generally located above the steering column under the instrument panel. Twenty ampere fuses are used for the tail light and stop light circuits. All other lights are protected by a circuit breaker located in the lighting switch.

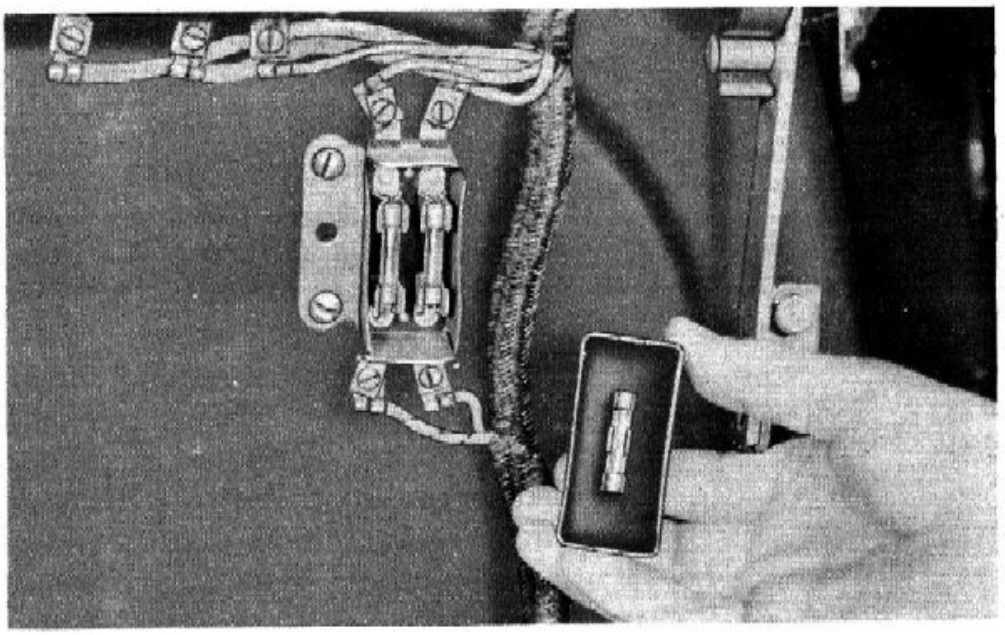

Fig. 62—Fuse Box

The fuse box cover is a snap on type with a spare fuse clip containing one fuse located inside the cover.

Fuse Replacement. In case tail or stoplights should fail to operate it is advisable to check the fuse in that circuit. See Figure 62. Remove the cover. Pull the fuse straight out of the fuse clips and replace it with a fuse known to be in good condition. Place the cover in position and snap into place. In case the new fuse burns out as soon as the circuit is tested, the cir-

cuit is likely to be shorted in which case it is advisable to contact a Chevrolet dealer.

NOTE: Always carry a spare fuse in the clip in fuse box cover.

TIRES

Description. Chevrolet commercial vehicles are equipped with synthetic rubber tires and tubes. It is important that these tires be properly inflated to assure normal tire life. See "Tire Inflation Table," page 20.

It is important to have your truck equipped with tires having a rated capacity to handle the anticipated loads as overloading tires seriously affect tire life.

Maintenance—

Mounting Synthetic Tubes.

1. Before installing tube in tire, clean inside of casing thoroughly.
2. Insert tube in tire and inflate until it is nearly rounded out.
3. Inspect rim for rust scale and bent flanges—clean rust scale and straighten flanges.
4. Using a brush or cloth swab, apply a solution of neutral vegetable oil soap to the inside and outside of tire beads and also to the rim side of tube. Do not allow soap solution to run down into tire.
5. When mounting tire and tube on drop center rim, follow the standard procedure. Be sure tire is centered on rim so that beads are out of rim well before inflating. Do not allow tire to hang loosely on wheel while inflating.
6. Center valve and pull it firmly against the rim. Hold in this position and inflate until beads are firmly seated on rim against flanges.
7. Completely deflate tire by removing valve core.
8. Reinflate tire to recommended pressure.

(Caution: When tube and flap are not properly lubricated and mounted, they will be stretched thin in the tire bead and rim region. This will cause premature failure.)

½ Ton Tire Changing. The drop center wheels used on ½ ton models have been so universally used on cars and light trucks

for so many years that it can be assumed that all motorists are familiar with the procedure for changing tires; however, the special information pertaining to "synthetic tubes" above should be carefully followed.

¾ Ton Tire Changing—Demounting.

1. Completely deflate tire by removing valve core.

2. Support wheel disc (retaining ring side up) on three or four wood blocks (2" x 4" block 3" or 4" long) to keep tire off the floor.

3. Loosen the tire bead from its seat in the rim by driving the flat end of the tire iron between the bead and the rim. Hold the iron down on the side wall to avoid cutting the bead, and make sure the iron is driven in until it strikes the rim. Apply downward pressure on the tire iron to force the bead away from the retaining ring. Continue around the tire until it is loosened all the way around and the retaining ring can be moved from its support on the gutter diameter and into the gutter well.

4. Insert curved end of tire iron in the square notch in the retaining ring and pry out and up while holding the ring down into the gutter at the opposite side (fig. 63). Continue this operation until the cutaway portion of the retaining ring nearest the tire iron spans the outside diameter of the rim gutter.

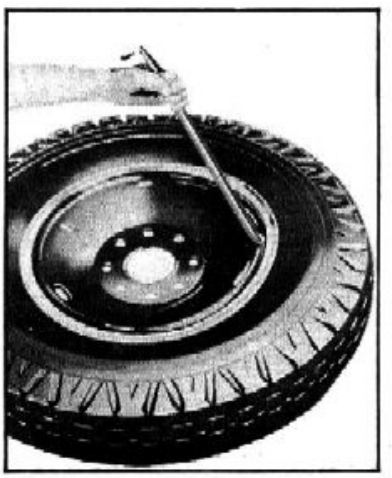

Fig. 63—¾ Ton Tire Removal

5. Continue to pry the remainder of this half of the retaining ring from the gutter by moving progressively toward the other cutaway portion in the ring.

6. The remainder of the retaining ring can now be pried out of the gutter and the ring removed.

7. Turn the wheel over and place it on the blocks with the ring side down; then force tire from wheel rim. Remove tire flap and tube from tire.

¾ Ton Tire Changing—Mounting.

1. Remove all rust scale from the rim and retainer ring.

2. Insert tube in tire and inflate until tube is nearly rounded out.

3. Lubricate tire beads, rim side of tube and both sides of flap with a solution of neutral vegetable oil soap or RuGlyde rubber lubricant. Insert flap in tire.

4. Place the wheel (rim flange down) on three or four small blocks.

5. Place tire on rim with the valve in line with the valve hole in the rim. Insert valve through hole, then work the tire onto the rim until the outer bead clears the rim gutter.

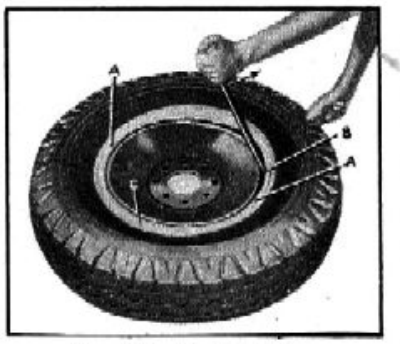

Fig. 64—¾ Ton Tire Installation

6. Place the retainer ring on the wheel rim and start the side of the ring opposite the square notch into the rim gutter, at "C" (fig. 64) making sure the two cutaway portions of the ring rest on the sides of the wheel at "A". Hold the first portion of the ring in the rim gutter and pry the remaining portion over the wheel rim. To pry the last portion into place, insert the tire iron in the notch "B", thus putting tension on the ring, and tap the ring with a hammer until it drops into place.

7. Inflate slowly to not more than 10 pounds pressure. See that the retainer ring is properly seated on its support in the rim gutter (tapping lightly with a hammer will help seat it firmly), and make sure that the tire bead rests evenly against the rim.

8. Turn the tire and wheel over with the ring down, or lean it against a wall with the ring side in. Completely deflate tire by removing valve core and then reinflate to recommended pressure.

1, 1½ and 2 Ton Equipped with 3 Section Wheel—Removing Tire.

1. Completely deflate tire by removing the valve core.

2. Using a hammer, tap around the side ring progressively to move it in toward the center of the rim until it clears the clamp ring (fig. 65).

3. Starting at the split in the clamp ring, raise its end out of the

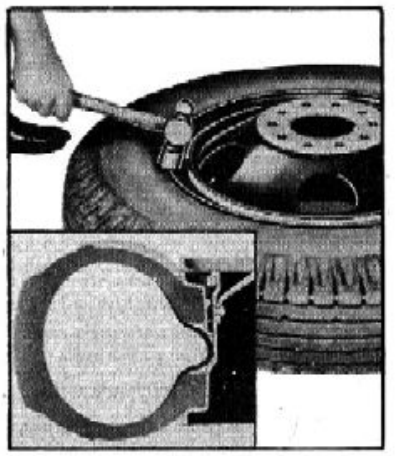
Fig. 65—Releasing Tire Clamp Ring

rim gutter using a screwdriver and the tire iron (fig. 66). Then remove the clamp ring by prying it out of the gutter with the tire iron, moving progressively around the rim (fig. 67).

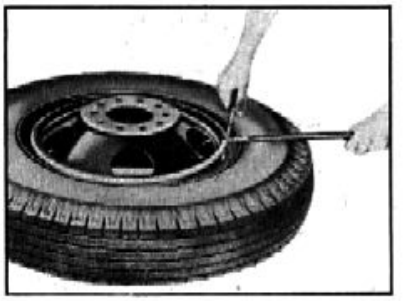

Fig. 66—Raising End of Clamp Ring

4. Drive the curved end of the tire iron in between the side ring and the entire bead (fig. 68). Then pry down on the opposite end of tire iron to move the tire bead away from the side ring flange (fig. 69). Continue the foregoing operation progressively around the tire until the side ring is removed. In some cases it may be necessary to work around the tire a couple of times.

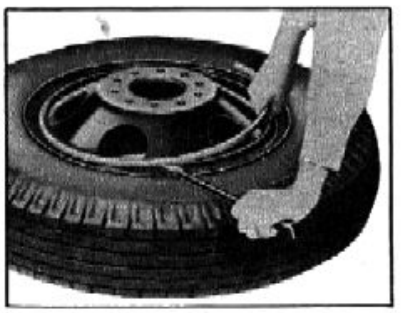

Fig. 67—Removing Tire Clamp Ring

NOTE: The tire bead seat on the side ring is slightly tapered; this design makes removal of the ring much easier.

5. Push the valve stem up inside the tire to prevent damage while removing the tire. The tire may be removed from the rim by following the procedure described in Item 4.

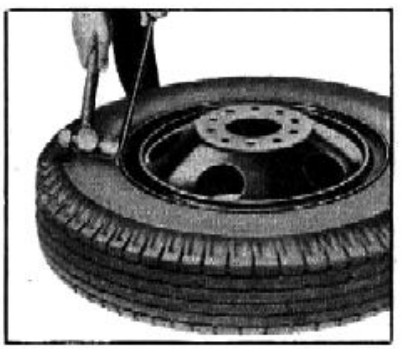

Fig. 68—Starting Side Ring Removal

Mounting Tire.

1. Remove all rust scale from the rim, side ring and clamp ring.

2. Insert tube in tire and inflate until tube is nearly rounded out.

3. Lubricate tire beads, rim side of tube and both sides of flap with a solution of neutral vegetable oil soap or RuGlyde rubber lubricant. Insert flap in tire.

4. Place tire on rim with valve in line with the valve hole in rim. Insert valve

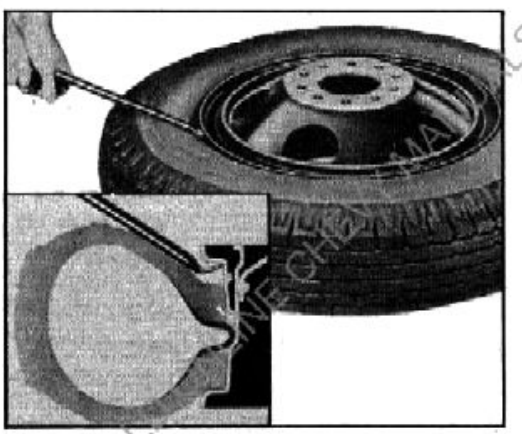

Fig. 69—Removing Side Ring

Fig. 70—Installing Clamp Ring

through hole; then work tire on to rim.

5. Place side ring into position on tire and rim; then press the side ring into tire and onto the rim using the tapered end of tire iron until the clamp ring gutter is exposed. Insert end of clamp ring in gutter and work progressively around the tire until the clamp ring is seated in the gutter (fig. 70).

6. Inflate tire slowly while checking to see that the side ring moves out over the clamp ring locking it into the gutter. Completely deflate the tire and then re-inflate to recommended pressure.

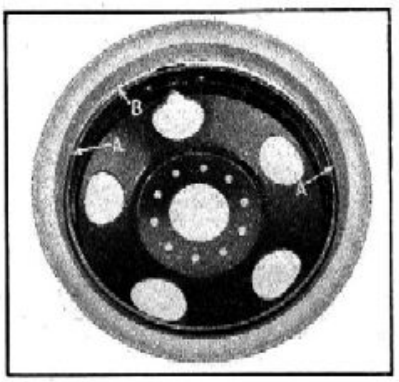

Fig. 71

1½ Ton Special, 2 Ton and C.O.E. Equipped with 2 Section Rims.

To facilitate assembly and removal, two cutaway sections "A" (fig. 71) and an operating notch "B" are incorporated in the locking flange of the side ring.

In separating the side ring from the wheel rim of the spare or new wheel for tire installation, stand the wheel up with the operating notch in the side ring at the top. The straight end of a tire iron is inserted and driven into the operating notch (fig. 72). The tool is moved as a lever to lift the side ring away from the rim. After the side ring has passed over the rim gutter at the operating notch, work progressively around entire rim until side ring is separated from wheel rim.

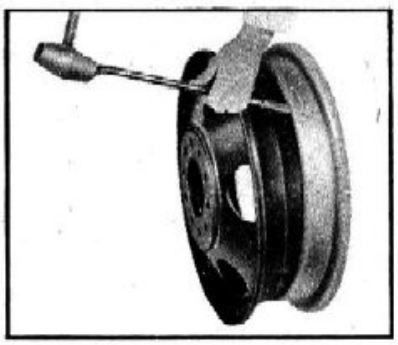

Fig. 72

Removing the Tire

1. Completely deflate tire by removing the valve core.

2. Loosen the tire bead from its seat in the side ring by driving the bead loosening end of a tire iron between the tire bead and the side ring (fig. 73). Repeat this operation progres-

sively around the side ring prying until bead is loose.

3. Insert straight end of tire iron into operating notch located at double pimples "B" (fig. 74).

4. Push side ring down at point opposite operating notch and force tire iron handle down causing side ring to disengage from rim gutter. Repeat progressively around side ring prying ring from rim gutter until free.

5. To free opposite tire bead from wheel rim, turn tire over and repeat mead loosening operation (fig. 75).

NOTE: It is not necessary to remove side ring from tire bead if tire is to be removed for tube repair only. Simply loosen tire bead from wheel rim as in figure 75. Then turn assembly over and remove ring with tire attached as in figure 74.

Fig. 73

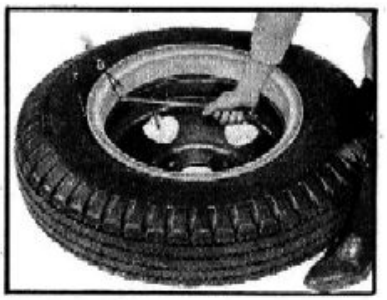

Fig. 74

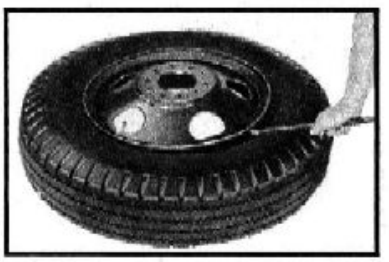

Fig. 75

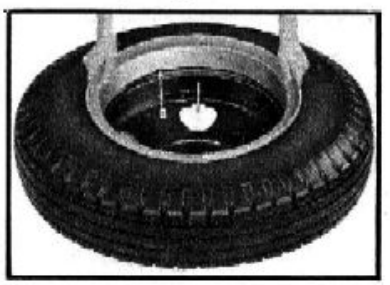

Fig. 76

Mounting the Tire

1. Remove all rust scale from wheel rim and side ring.

2. Insert tube in tire and inflate until tube is nearly rounded out.

3. Lubricate tire beads, rim sides of tube and both sides of flap with a solution of neutral vegetable soap or Ru-Glyde or similar rubber lubricant. Insert flap in tire.

4. Place disc portion of wheel on floor with rim gutter up and install tire and tube assembly indexing tube valve stem with stem support in wheel rim and with valve stem pointing in desired direction.

5. Place side ring in position with operating notch "B" (fig. 76) approximately three inches from valve on either side.

6. The two cutaway sections opposite each other "A" (fig. 77) on inner diameter of side ring are positioned so as to span the rim gutter.

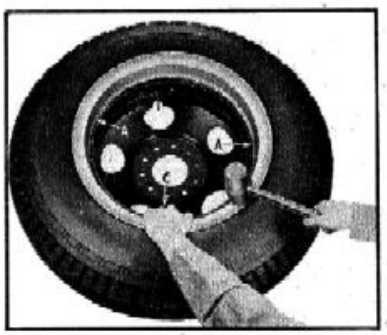

Fig. 77

Fig. 78

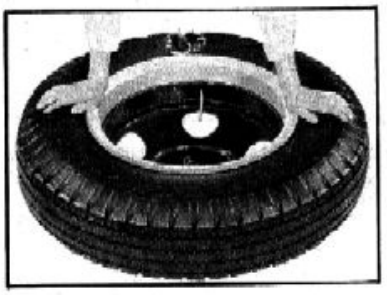

Fig. 79

7. At point "C" (fig. 77), opposite valve, force ring into rim gutter as far as possible.

8. Insert straight end of tire iron into operating notch "B" (fig. 78). Then pull in direction indicated.

9. Retain pressure with tool and strike side ring downward at a point between operating notch and cutaway section, thereby engaging side ring over rim gutter at these points.

10. Remove tool and strike additional blows progressively toward other cutaway section until entire toe of side ring has passed over the rim gutter.

11. While the side ring is being applied to the wheel rim, it is tight and requires force or hammer blows to complete the application. When the side ring is completely installed on the rim, it is no longer tight and can be depressed or will yield to a light hammer blow. Precaution should be taken to see that the side ring is not binding on the rim and can be freely depressed (fig. 79) before inflating the tire.

CHAPTER III

LUBRICATION

Chevrolet dealers are equipped to render complete lubrication service. We recommend that truck owners take advantage of the dealers modern equipment and trained men.

Lubricants are much cheaper than repair bills, and should be applied regularly to secure a maximum of useful service from a vehicle. It is, consequently, important that the proper grade of lubricants be used in accordance with a definite schedule.

In selecting the proper brand of oil, it is desirable to consider the reputation of the refiner or marketer. He is responsible for the quality of his product and his reputation is the best indication of quality.

ENGINE

Use of the proper engine oil is of great importance in obtaining maximum performance and satisfaction from a truck.

It is imperative that the recommended light oils be used in the engine during the "breaking-in" period.

Light oils assure a better "breaking-in" of the engine, as they assure ease of starting; prompt flow of a sufficient quantity of oil to the bearings; less friction between moving parts; less wear of moving parts, etc.

Types of Oils. Crankcase oils in service, unless protected against oxidation, may form sludge and varnish and under some conditions corrosive acids.

To minimize the formation of these harmful decomposition products and to supply the type of oil best suited for the different operating conditions, the oil industry markets several types of crankcase oils. These types are defined by the General Committee, Division of Marketing, of the American Petroleum Institute as follows:

"REGULAR TYPE"—This term designates motor oil generally suitable for use in internal combustion engines under moderate operating conditions.

"PREMIUM TYPE"—This term designates motor oil having the oxidation stability and bearing corrosion preventive properties necessary to make it generally suitable for use in internal combustion engines where operating conditions are more severe than regular duty.

"HEAVY-DUTY TYPE"—This term designates motor oil having the oxidation stability, bearing corrosion preventive properties, and detergent dispersant characteristics necessary to make it generally suitable for use in both high speed Diesel and gasoline engines under heavy-duty service conditions.

Regular, Premium and Heavy-Duty Type Oils. For the maximum protection of your Chevrolet Engine under all driving conditions, it is recommended that Heavy-Duty Type Motor Oils be used. If the Heavy-Duty Type Oils are not available, Premium Type Oils may be used. Under no conditions, except for extremely light duty, should the Regular Type Oils be used.

S.A.E. Viscosity Numbers. The viscosity of a lubricant is simply a measure of its body or fluidity.

The S.A.E. viscosity numbers constitute a classification of lubricants in terms of viscosity or fluidity, but with no reference to any other characteristics or properties.

The S.A.E. viscosity numbers have been adopted by practically all oil companies, and no difficulty should be experienced in obtaining the proper viscosity grade in the different types of motor oils to meet seasonal requirements.

Viscosity Grades of Oil. The S.A.E. viscosity numbers constitute a classification for crankcase lubricating oils in terms of viscosity only. Viscosity numbers without an additional symbol are based on the viscosity at 210° F. Viscosity numbers with the additional "W" are based on the viscosity at 0° F. The viscosity of oils included in this classification for use in crankcases shall not be less than 39 SUS at 210°F. Other factors of oil character or quality are not considered.

SAE Viscosity Number	Viscosity Range, Saybolt Univ. Sec.			
	At 0° F.		At 210° F.	
	Minimum	Maximum	Min.	Max.
10-W	6000 (Note A)	Less than 12000	—	—
20-W	12000 (Note B)	Less than 48000	—	—
20	—	—	45	Less than 58
30	—	—	58	Less than 70
40	—	—	70	Less than 85
50	—	—	85	Less than 110

Note A: Minimum Viscosity at 0° F. can be waived provided viscosity at 210° F. is not below 40 Saybolt Seconds Universal.

Note B: Minimum Viscosity at 0° F. can be waived provided viscosity at 210° F. is not below 45 Saybolt Seconds Universal.

Lubrication—First 500 Miles. The crankcase of the engine, as delivered, is filled with a light body breaking-in oil.

Use this oil during the first 500 miles.

NOTE: At the end of the first 500 miles, drain the crankcase—when hot—and refill to the proper level with the recommended oil.

Lubrication—After 500 Miles. After the first 500 miles, the crankcase oil should be selected to give the best performance under individual climatic and driving conditions.

Fall—Winter—Spring. During the colder months of the year, an oil which will permit easy starting at the lowest atmospheric temperature likely to be encountered should be used.

When the crankcase is drained and refilled, the crankcase oil should be selected not on the basis of the existing temperature at the time of the change, but on the lowest temperature anticipated for the period during which the oil is to be used.

Unless the crankcase oil is selected on the basis of viscosity or fluidity at the anticipated temperature, difficulty in starting will be experienced at each sudden drop in temperature.

The viscosity grade of crankcase oil will, therefore, depend upon the climatic conditions under which a truck is operated. The grades best suited for use in the engine at the various temperatures are shown in the following table:

If you anticipate that the lowest atmospheric temperature will be:	Use the grade indicated:
As low as 32° F.	S.A.E. 20-W or S.A.E. 20
As low as plus 10° F.	S.A.E. 20-W
As low as minus 10° F.	S.A.E. 10-W
Below minus 10° F.	S.A.E. 10-W plus 10% Kerosene

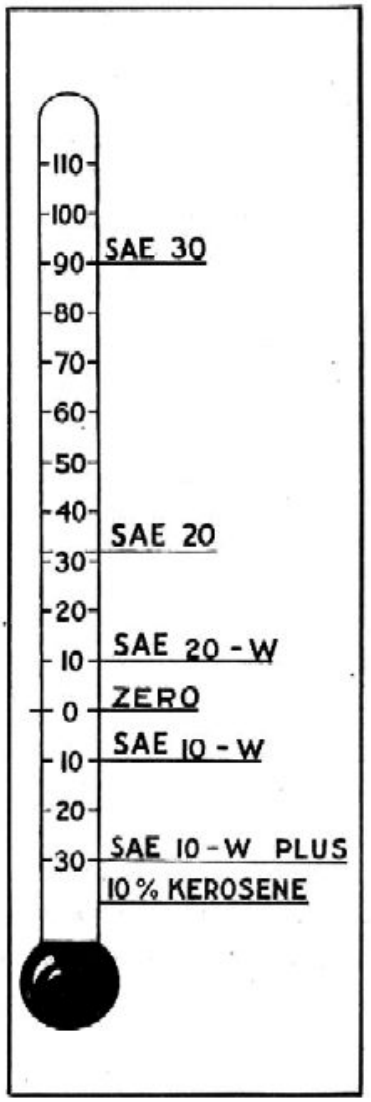

Fig. 80—Oil Thermometer

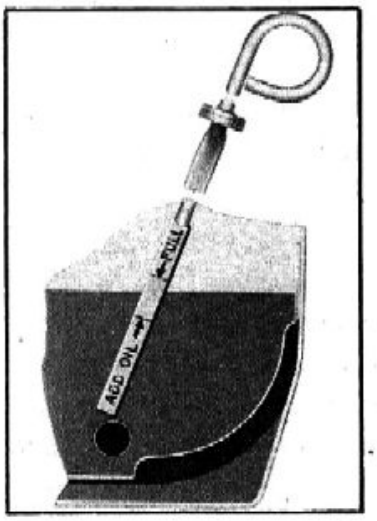

Fig. 81—Oil Gauge Rod In Pan

S.A.E. 10-W oil plus 10% kerosene is recommended only for those territories where the temperature falls below 10 degrees below Zero for protracted periods.

Figure 80 shows the data in the above table as it would appear on a thermometer—the lowest temperature at which the indicated grades of oil will permit easy starting.

NOTE: When in doubt use the lighter grade of oil.

We recommend the use of S.A.E. 20-W rather than S.A.E. 20 if you anticipate temperatures to drop to freezing.

Summer. The use of S.A.E. 20-W or S.A.E. 20 oils during the summer months will permit better all around performance than will the heavier body oils, with no appreciable increase in oil consumption.

If S.A.E. 20 or S.A.E. 20-W oil is not available, S.A.E. 30 oil may be used if it is expected that the average prevailing daylight temperature will consistently be above 90° F.

Maintaining Oil Level. The Oil Gauge Rod (fig. 81) is marked "Full" and "Add Oil." These notations have broad arrows pointing to the level lines.

The oil level should be maintained between the two lines; neither going above the "Full" line nor under the "Add Oil" line.

Check the oil level frequently and add oil when necessary. Always be sure the crankcase is full before starting on a long drive.

Oil Pressure Gauge. When starting a cold engine, it will be noted that the oil gauge on the instrument panel will register a high oil pressure. As the engine warms up, the pressure will drop until it reaches a point where changes to higher speeds will raise the pressure very little, if at all.

If the oil pressure registers abnormally high after the engine is thoroughly warmed up, an inspection should be made to ascertain if the oil lines and passages are "plugged" up.

When to Change Crankcase Oil. Oils have been greatly improved, driving conditions have changed, and improvements in engines, such as the crankcase ventilating system, have greatly lengthened the life of good lubricating oils. However, to insure continuation of best performance, low maintenance cost and long engine life, it is necessary to change the crankcase oil whenever it becomes contaminated with harmful foreign materials. Under normal driving conditions, draining the crankcase and replacing with fresh oil every 2000-3000 miles is recommended.

Under the driving conditions described in the following paragraphs, it may become necessary to drain the crankcase oil more frequently.

Frequent long runs at high speed, or continuous driving with heavy loads, with the resultant high engine operating temperatures, may oxidize the oil and may result in the formation of sludge and varnish. While no definite drain periods can be recommended under these conditions, they should be more frequent than under normal driving conditions.

Driving over dusty roads or through dust storms introduces abrasive material into the engine. Carburetor air cleaners decrease the amount of dust that may enter the crankcase. The frequency of draining depends upon severity of dust conditions and no definite draining periods can be recommended, but should be more frequent than under normal driving conditions.

Short runs in cold weather, such as city driving, and excessive idling, do not permit thorough warming up of the engine and water may accumulate in the crankcase from condensation of moisture produced by the burning of the fuel. Water, in the crankcase, may freeze and interfere with proper oil circulation. It also promotes rusting and may cause clogging of oil screens and passages. Under normal driving conditions this water is removed by the crankcase ventilator. But if water

accumulates it should be removed by draining the crankcase as frequently as may be required.

It is always advisable to let the engine reach normal operating temperature before draining the crankcase. The benefit of draining is, to a large extent, lost if the crankcase is drained when the engine is cold as some of the suspended foreign material will cling to the sides of the oil pan and will not drain out readily with the slower moving oil.

Crankcase Dilution

Probably the most serious phase of engine oil deterioration is that of crankcase dilution, which is the thinning of the oil by fuel vapors leaking by the pistons and rings and mixing with the oil.

Leakage of fuel, or fuel vapors, into the oil pan mostly occurs during the "warming-up" period, when the fuel is not thoroughly vaporized and burned.

Automatic Control Devices to Minimize Crankcase Dilution. The Chevrolet engine is equipped with automatic devices which aid greatly in minimizing the danger of crankcase dilution.

Rapid warming up of the engine is aided by the thermostatic water temperature control, which automatically prevents circulation of the water in the cooling system until it reaches a predetermined temperature.

Thermostatic heat control on the exhaust manifold, during the warming-up period, automatically directs the hot exhaust gases against the center of the intake manifold, greatly aiding the proper vaporization of the fuel.

Sparing use of the choke reduces danger of raw, or unvaporized fuel entering the combustion chamber and leaking into the oil reservoir.

An efficient crankcase ventilating system drives off fuel vapors and aids in the evaporization of the raw fuel and water which may find its way into the oil reservoir.

Control by Truck Owner Under Abnormal Conditions. Ordinarily the above automatic control devices will minimize, or eliminate, the danger of crankcase dilution.

However, there are abnormal conditions of service when the truck owner must aid in the control of crankcase dilution.

Short runs in cold weather, such as city driving and

excessive idling, do not permit the thorough warming up of the engine nor the efficient operation of automatic control devices. It is recommended that the oil be changed more often when the truck is subjected to this type of operation.

Poor mechanical condition of the engine, such as scored cylinders, poor ring fit, "sloppy" or loose pistons, faulty valves, and poor ignition will increase crankcase dilution. Keep your truck in good mechanical condition.

Poor fuels which contain portions hard to ignite and slow to burn will increase crankcase dilution. Use good fuel.

Water in Crankcase. Serious lubrication troubles may result in cold weather due to an accumulation of water in the oil pan. This condition is as a rule little understood by the truck owner. To demonstrate the chief cause of water in the oil pan, hold a piece of cold metal near the end of the exhaust pipe of the engine and note the rapid condensation and collection of drops of water on it. The exhaust gases are charged with water vapor and the moment these gases strike a cold surface, they will condense, forming drops of water.

A slight amount of these gases pass the pistons and rings, even under the most favorable conditions, and cause the formation of water in the oil pan, in a greater or lesser degree, until the engine becomes warm. When the engine becomes thoroughly warm, the crankcase will no longer act as a condenser and all of these gases will pass out through the crankcase ventilator system.

Short runs in cold weather, such as city driving, will aggravate this condition.

Corrosion. Practically all present day engine fuel contains a small amount of sulphur which, in the state in which it is found, is harmless; but this sulphur on burning, forms certain gases, a small portion of which is likely to leak past the pistons and rings and reacting with water, when present in the crankcase, form corrosive acids. The more sulphur in the fuel, the greater the danger from this type of corrosion. This is a condition which we cannot wholly avoid, but it may be reduced to a minimum by proper care of the engine.

As long as the gases and the internal walls of the crankcase are hot enough to keep water vapor from condensing, no harm will result; but when an engine is run in low temperatures, moisture will collect and unite with the gases formed by

combustion; thus, acid will be formed and is likely to cause serious etching or pitting. This etching, pitting or corrosion, when using fuel containing considerable sulphur, manifests itself in excessively rapid wear on piston pins, camshaft bearings and other moving parts of the engine, oftentimes causing the owner to blame the truck manufacturer or the lubricating oil when in reality the trouble may be traced back to the character of fuel used, or a condition of the engine, such as excessive blow-by or improper carburetor adjustment.

Water Pump

The permanently sealed ball bearing water pump does not require lubrication by the truck owner.

Starting Motor

Starting Motor has aluminum end frames equipped with oil-less bearings which do not require lubricant.

Generator

Every 1,000 miles put a few drops of a light oil, or engine oil, in the 2 oil cups.

Distributor

Lubricant cup located on side of housing is filled with chassis lubricant. Turn cup down one turn every 1,000 miles. Distributor cap should be removed every 5,000 miles, then remove rotor and place a few drops of SAE 10 engine oil on felt wicking in top of cam. Apply a small amount of petroleum jelly on distributor cam surface by holding a clean cloth which has been soaked in jelly against it while cranking starter.

REAR AXLE AND TRANSMISSION

The lubrication requirements of Heavy-Duty Hypoid Truck Axles differ somewhat from the Passenger Car Hypoid Axle. The truck operates under the most severe lubrication conditions in low gear under heavy load while the passenger car operates under the most severe lubrication conditions at high speed.

Recommended Lubricants. Rear Axles—S.A.E. 90 "Multi-Purpose" Gear Lubricant
2-Speed Rear Axles—S.A.E. 90 "Multi-Purpose" Gear Lubricant
Transmissions—S.A.E. 90 Straight Mineral Oil Gear Lubricant
S.A.E. 90 "Multi-Purpose" Gear Lubricant

Caution: Straight Mineral Oil Gear Lubricants must not be used in Hypoid Rear Axles or 2-Speed Rear Axles.

The S.A.E. 90 viscosity grade is recommended for "year-around" service. However, when extremely low temperatures are encountered for protracted periods during the winter months, the S.A.E. 80 viscosity grade may be used.

"Multi-Purpose" Gear Lubricants. Gear lubricants that will satisfactorily lubricate both passenger car and truck hypoid rear axles, have been developed. These lubricants are known as "Multi-Purpose" Gear Lubricants.

"Multi-Purpose" Gear Lubricants may also be used in passenger car and truck transmission, steering gears, and in universal joints requiring a fluid lubricant.

"Multi-Purpose" Gear Lubricants must be carefully compounded and of the latest non-corrosive type and of proven quality. The lubricant manufacturer must be responsible for the satisfactory performance of his product. His reputation is your best indication of quality.

Lubricant Additions. The lubricant level in the housing should be checked periodically and with unit at operating temperature, lubricant should be level with bottom of filler plug hole.

It is recommended that any additions required to bring up the lubricant level be made, using the same type of lubricant as in the housing.

Lubricant Changes. Seasonal changes of the lubricant are not required. When refilling is necessary, refill with lubricant recommended above.

UNIVERSAL JOINT

½ Ton (116" Wheelbase) Models. The universal joint is the bushed trunnion type and receives its lubrication from the

transmission. Additional lubrication at this point is unnecessary. The bearing retaining screw hole in the top of the housing is used to fill the universal joint at the time of assembly.

NOTE: The pipe plug in the top of the front universal joint housing on the 4-speed transmission (optional equipment) is for manufacturing purposes and is used to fill the front universal joint at the time of assembly.

¾ Ton (125¼" Wheelbase) Models. The front universal joint immediately to the rear of the transmission is the bushed trunnion bearing type and receives its lubrication from the transmission.

Additional lubrication at this point is unnecessary. The bearing retaining screw hole in the top of the housing is used to fill the front universal joint at the time of assembly.

NOTE: The pipe plug in the top of the front universal joint housing on the 4-speed transmission (optional equipment) is for manufacturing purposes and is used to fill the front universal joint at the time of assembly.

The intermediate and rear universal joints are the needle bearing type equipped with lubrication fittings, and should be lubricated with the same type of lubricant used in the transmission.

CAUTION: Under no consideration should any of the soap type of lubricants—such as chassis lubricant, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the rear of the intermediate universal joint is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

1 Ton Truck 137", 1½ Ton Conventional Trucks 137" and 161", 1½ to 2 Ton Heavy Duty Trucks 137", 161" and 179" Wheel Base, Cab-Over-Engine Trucks 134" and 158" Wheel Base. The front, intermediate and rear universal joints are the needle bearing type equipped with lubrication fittings and should be lubricated with the same type of lubricant used in the transmission.

CAUTION: Under no consideration should any of the soap type of lubricants—such as chassis lubricants, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the rear of the intermediate universal joint, is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

110" Wheelbase Cab-Over-Engine Trucks. The front and rear universal joints are the needle bearing type equipped with lubrication fittings and should be lubricated with the same type of lubricant used in the transmission.

CAUTION: Under no consideration should any of the soap type of lubricants—such as chassis lubricants, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the rear of the front universal joint, is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

199" Wheelbase School Bus. The front, front intermediate, rear intermediate and rear universal joints are the needle bearing type equipped with lubrication fittings, and should be lubricated with the same type of lubricant used in the transmission.

CAUTION: Under no consideration should any of the soap type of lubricants—such as chassis lubricants, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the rear of the rear intermediate universal joint, is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

FRONT WHEEL BEARINGS

½, ¾ and 1 Ton. Front wheels are equipped with ball bearings and should be packed with a high melting point front wheel bearing lubricant.

1½ and 2 Ton. Front wheels are equipped with "Barrel" type roller bearings and should be packed with a soft, smooth lubricant. Fibrous or viscous types of lubricants must not be used.

Due to the weight of the tire and wheel assembly it is recommended that they be removed from hub before lubricating bearings to prevent damage to oil seal. Then remove the front wheel hub to lubricate the bearings. The bearings should be thoroughly

cleaned before repacking with lubricant. Do not pack the hub between the inner and outer bearing assemblies, or the hub cap, as this excessive lubrication results in the lubricant working out into the brake drum and linings.

In mounting the front hubs, great care must be taken not to damage seals and to properly adjust bearings, (see page 46).

REAR WHEEL BEARINGS

The rear wheel bearings receive their lubrication from the rear axle. When installing bearings which have been cleaned, repack with a smooth type grease.

CHASSIS

For chassis lubrication, consult the lubrication chart, which shows the points to be lubricated and how often the lubricant should be applied.

The term "Chassis Lubricant" as used in this manual, describes a semi-fluid lubricant designed for application by commercial pressure gun equipment. It is composed of mineral oil (usually 300 to 500 second Saybolt Universal viscosity at 100° F.) combined with approximately 8% soap, or soaps, which are insoluble in water.

Spring Shackles and Spring Bolts

The spring shackles and spring bolts are equipped with pressure gun lubrication fittings, and should be lubricated with lubricant recommended under "Chassis Lubrication."

Brake and Clutch Pedals

The brake and clutch pedals on the Cab-Over-Engine truck models are equipped with pressure gun lubrication fittings. On the other truck models, only the brake pedal is equipped with a pressure gun lubrication fitting; the lubricant so applied lubricates both the brake pedal and the clutch pedal. Use chassis lubricant at these points.

Brake and Clutch Idler Lever
(¾ and 1 ton Forward Control)

The brake idler lever on the above models is equipped with a pressure gun lubrication fitting. Lubricate with chassis lubricant every 1,000 miles.

½ TON TRUCK LUBRICATION

1. Front Spring Shackle (2 each side) ..... 1000 mile
2. Generator (2 oil cups) (see page 77) ..... 1000 mile
3. King Pin (2 each side) ..... 1000 mile
4. Front Wheel Bearing (see page 80) ..... 10,000 mile
5. Tie Rod (1 each side) ..... 1000 mile
6. Steering Connecting Rod (1 each end) ..... 1000 mile
7. Front Spring Bolt (1 each side) ..... 1000 mile
8. Distributor (1 cup) (see page 77) ..... 1000 mile
9. Steering Gear (see page 90) ..... 1000 mile
10. Air Cleaner (see page 26) ..... 2000 mile
11. Throttle Bell Crank ..... 1000 mile
12. Transmission (see page 77) .....
13. Rear Spring Bolt (1 each side) ..... 1000 mile
14. Brake Pedal (see page 81) ..... 1000 mile
15. Rear Axle (see page 77) .....
16. Rear Spring Shackle (2 each side) ..... 1000 mile

Lubricant Key for Figure 82

CL Chassis Lubricant

EO Light Engine Oil

WB Wheel Bearing Lubricant

SG Steering Gear Lubricant

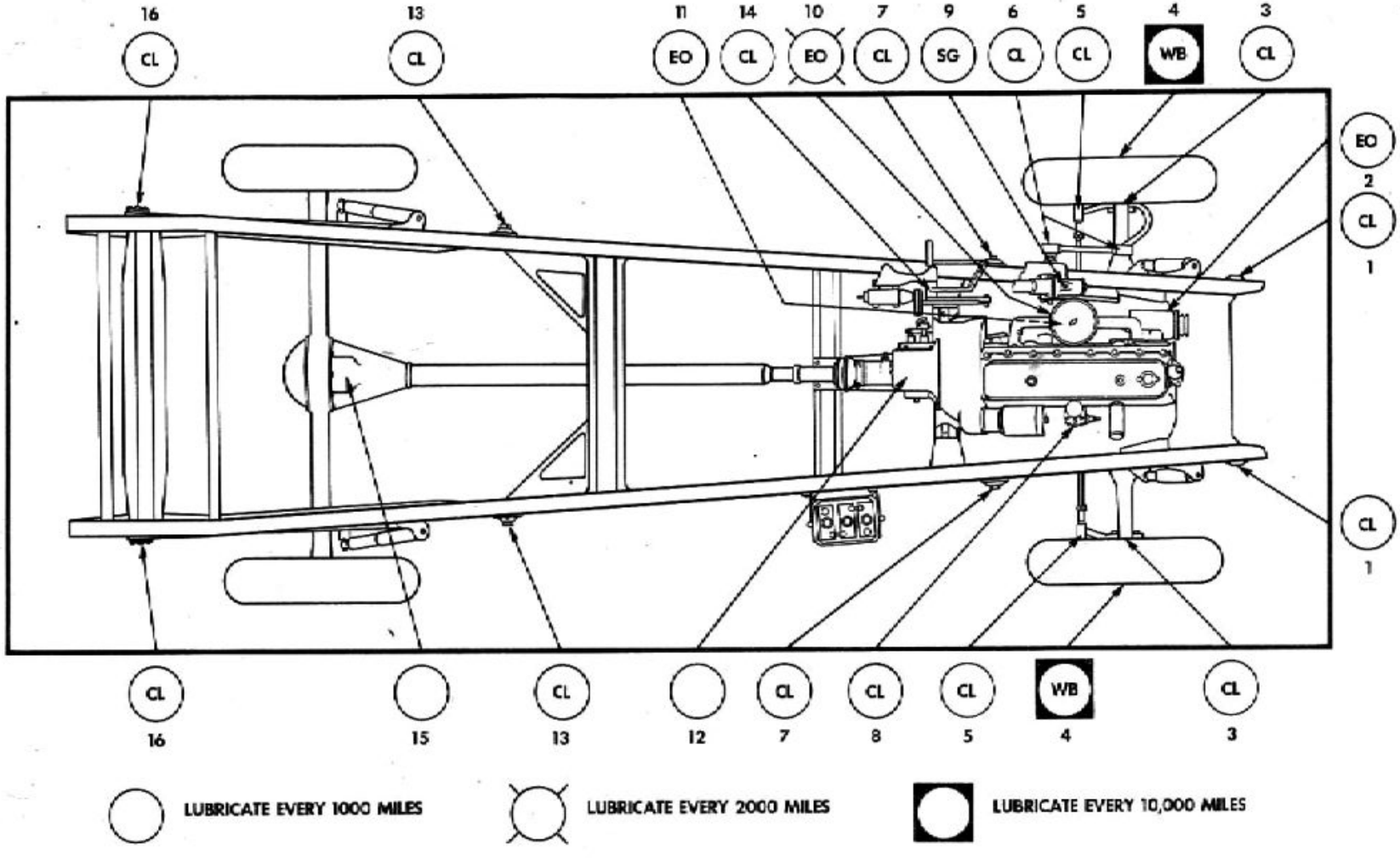

Fig. 82—½ Ton Lubrication Chart

¾ TON TRUCK LUBRICATION

1. Front Spring Shackle (2 each side) ..... 1000 mile
2. Generator (2 oil cups) (see page 77) ..... 1000 mile
3. King Pin (2 each side) ..... 1000 mile
4. Front Wheel Bearing (see page 80) ..... 10,000 mile
5. Tie Rod (1 each side) ..... 1000 mile
6. Steering Connecting Rod (1 each end) ..... 1000 mile
7. Steering Gear (see page 90) ..... 1000 mile
8. Distributor (1 cup) (see page 77) ..... 1000 mile
9. Front Spring Bolt (1 each side) ..... 1000 mile
10. Air Cleaner (see page 26) ..... 2000 mile
11. Brake Pedal (see page 81) ..... 1000 mile
12. Throttle Bell Crank ..... 1000 mile
13. Transmission (see page 77) .....
14. Universal Joint (1 each—see page 78) ..... 1000 mile
15. Propeller Shaft Slip Joint ..... 1000 mile
16. Rear Spring Bolt (1 each side) ..... 1000 mile
17. Rear Axle (see page 77) .....
18. Rear Spring Shackle (2 each side) ..... 1000 mile

Lubricant Key for Figure 83

CL Chassis Lubricant

EO Light Engine Oil

WB Wheel Bearing Lubricant

SG Steering Gear Lubricant

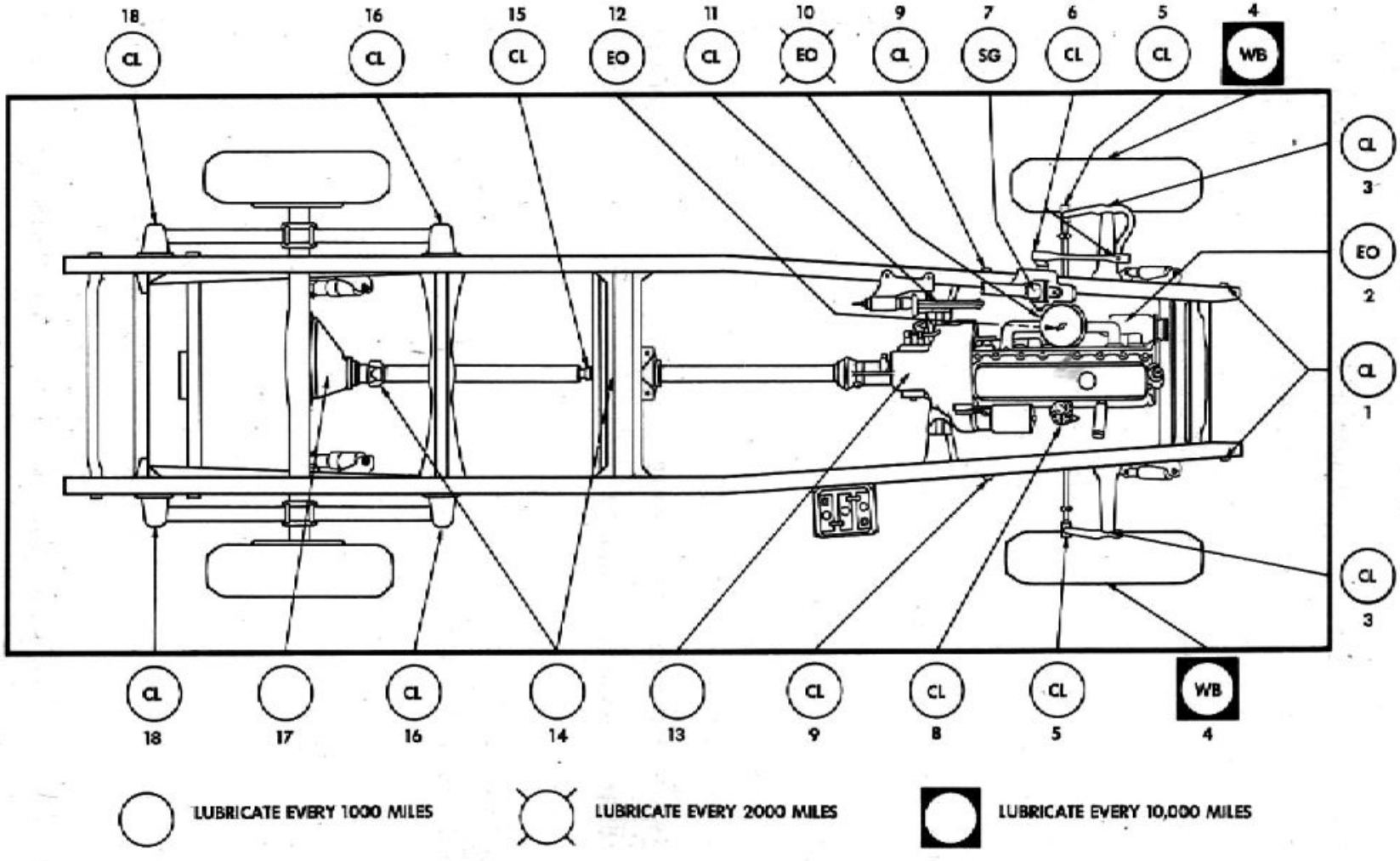

Figure 83—¾ Ton Lubrication Chart

1 TON TRUCK LUBRICATION

1. Front Spring Shackle (2 each side) ..... 1000 mile
2. Generator (2 oil cups) (see page 77) ..... 1000 mile
3. King Pin (2 each side) ..... 1000 mile
4. Front Wheel Bearings (see page 80) ..... 10,000 mile
5. Tie Rod (1 each side) ..... 1000 mile
6. Steering Connecting Rod (1 each end) ..... 1000 mile
7. Front Spring Bolt (1 each side) ..... 100 mile
8. Distributor (1 cup) (see page 77) ..... 1000 mile
9. Steering Gear (see page 90) ..... 1000 mile
10. Air Cleaner (see page 26) ..... 2000 mile
11. Universal Joint (1 each) (see page 78) ..... 1000 mile
12. Throttle Bell Crank ..... 1000 mile
13. Transmission (see page 77) .....
14. Rear Spring Bolt (1 each side) ..... 1000 mile
15. Rear Axle (see page 77) .....
16. Rear Spring Shackle (2 each side) ..... 1000 mile
17. Brake Pedal (see page 81) ..... 1000 mile
18. Propeller Shaft Slip Joint ..... 1000 mile

Lubricant Key for Figure 84

CL Chassis Lubricant

EO Engine Oil

WB { **Wheel Bearing Lubricant for Ball Bearings.**
Soft Smooth Grease for Roller Bearings.
(See page 77).

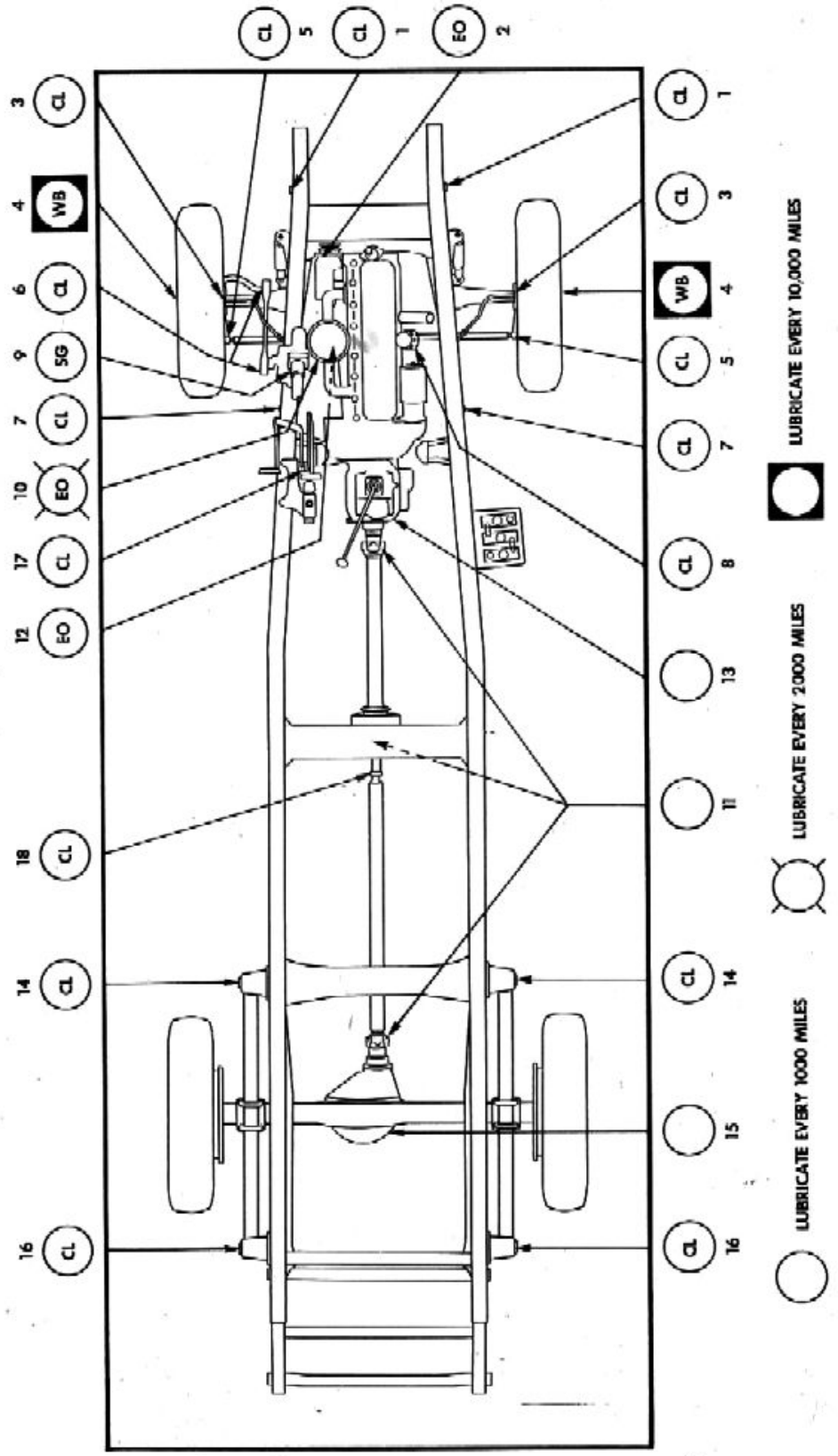

Fig. 84—1 Ton Lubrication Chart

1½ AND 2 TON TRUCK LUBRICATION

1. Front Spring Shackle (2 each side) ..... 1000 mile
2. Generator (2 oil cups) (see page 77) ..... 1000 mile
3. King Pin (2 each side) ..... 1000 mile
4. Front Wheel Bearing (see page 80) ..... 10,000 mile
5. Tie Rod (1 each side) ..... 1000 mile
6. Steering Connecting Rod (1 each end) ..... 1000 mile
7. Front Spring Bolt (1 each side) ..... 1000 mile
8. Distributor (1 cup) (see page 77) ..... 1000 mile
9. Steering Gear (see page 90) ..... 1000 mile
10. Air Cleaner (see page 26) ..... 2000 mile
11. Universal Joint (1 each) (see page 78) ..... 1000 mile
12. Throttle Bell Crank ..... 1000 mile
13. Transmission (see page 77) .....
14. Rear Spring Bolt (1 each side) ..... 1000 mile
15. Rear Axle (see page 77) .....
16. Rear Spring Shackle (2 each side) ..... 1000 mile
17. Brake Pedal (see page 81) ..... 1000 mile
18. Propeller Shaft Slip Joint ..... 1000 mile
19. Hydrovac (see page 90) ..... 10,000 mile
20. Parking Brake Operating Lever ..... 1000 mile

Lubricant Key for Figure 85

CL Chassis Lubricant

EO Engine Oil

BL—Bendix Vacuum Cylinder Oil

WB { **Wheel Bearing Lubricant for Ball Bearings.**
Soft Smooth Grease for Roller Bearings.
(See page 77).

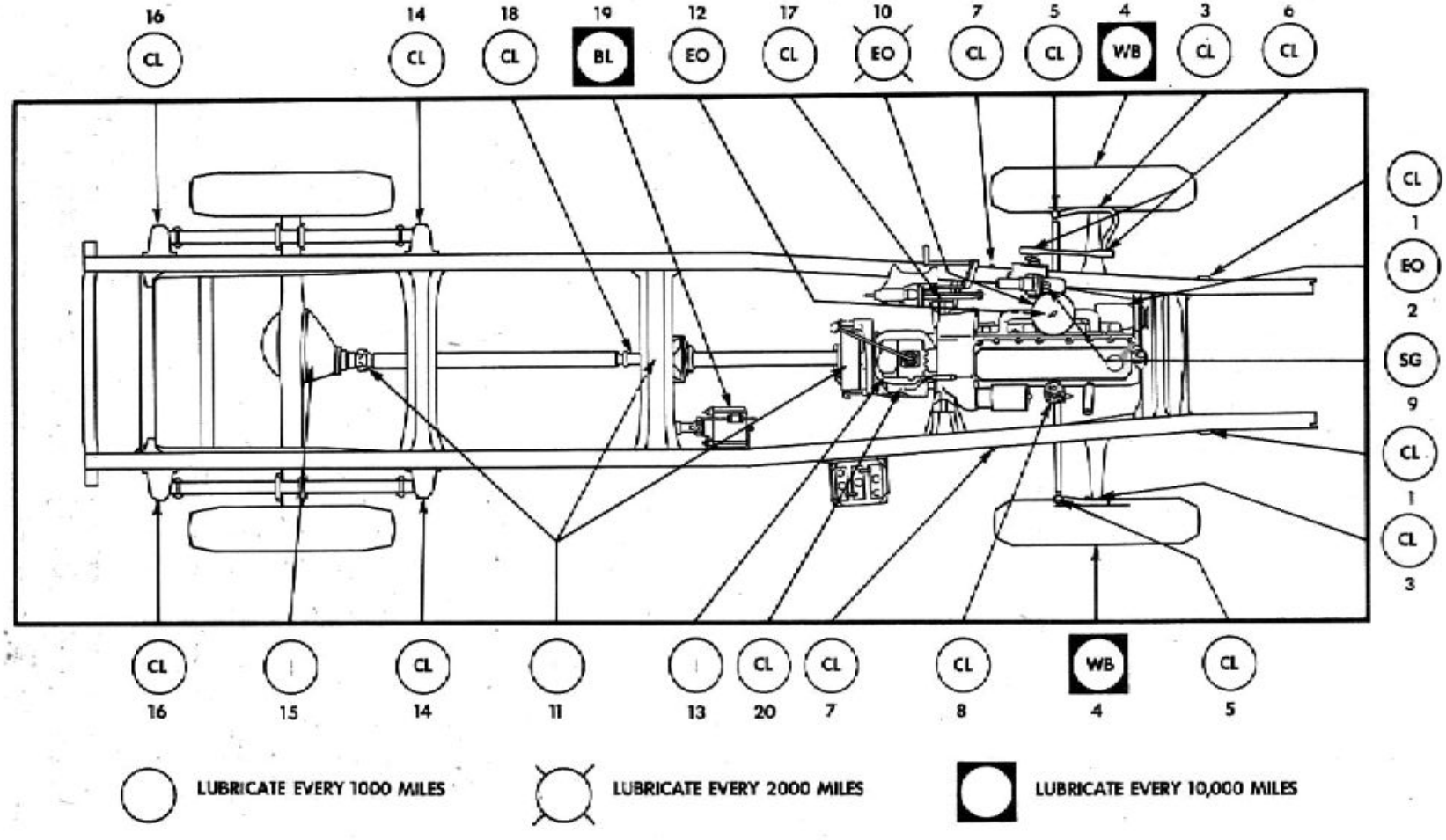

Fig. 85—1½ and 2 Ton Lubrication Chart

Hydrovac

The Hydrovac unit is equipped with a lubrication plug in the closed end of the shell approximately ½" from the bottom of the cylinder. One ounce of Bendix Vacuum Cylinder Oil should be added at 10,000 mile intervals or each six month period, especially prior to the start of cold weather.

This oil is necessary to facilitate oiling of the vacuum piston leather. Oiling of the leather is necessary to prevent piston drag and possible bending of the piston rod.

Steering Gear Lubrication

The steering gear is filled at the factory with an all-season gear lubricant. Seasonal change of this lubricant is unnecessary and the housing should not be drained. Whenever required, additions should be made using steering gear lubricants marketed by many oil companies, "Multi-Purpose" gear lubricants as recommended for rear axle and transmission may be used.

The pipe plug is installed at this point to prevent over-lubrication, generally occasioned by the use of a pressure gun.

Over-lubrication of this unit might result in forcing lubricant up the steering gear tube to the horn button and steering wheel.

Steering Column Manual Shift Mechanism

½ Ton and ¾ Ton Models

This mechanism, lubricated at the factory, is well protected and should not require further lubrication.

However, should the shifting effort become noticeably greater, remove the cap on the gearshift control box and fill box with a soft smooth grease.

General Note

Cab-Over-Engine trucks are provided with removable floor pans and Forward Control units have a removable engine compartment lid for easy access to the engine compartment.

To lubricate the C.O.E. generator front and rear bearings, standpipes are provided which are readily accessible after raising the hood.

CHAPTER IV

HINTS FOR LOCATING ROAD TROUBLES

This chapter is published with the thought that it might be of value to some owner through the pleasant years of Chevrolet ownership in case of minor road troubles. Only items that the average owner might check and correct, thereby avoiding inconvenience, expense and delay, are covered.

ENGINE

Starter will not Crank Engine

1. This trouble is usually caused by a discharged, weak or faulty battery. Try the lights and if they light, the engine can probably be started by pushing or towing the truck with the transmission in high gear. If not, it will be necessary to get a rental battery and have the battery charged. It is advisable to have the electrical system checked to determine the cause of battery trouble.

2. In some cases this trouble may be caused by battery cables, starter switch, starter solenoid or starting motor. Check for faulty battery cables or loose connections, have the starter tested and necessary repairs made.

3. In some cases the trouble may be within the engine and caused by unusually heavy oil in cold weather, overheating the engine, or an unusually tight engine. If the engine has been overheated the engine should be allowed to cool off and the cause of overheating corrected.

4. Sometimes a tight engine can be broken loose by placing the transmission in high gear and rocking the vehicle back and forth.

NOTE: Never put water in a hot engine.

Engine Cranks but Will Not Start Readily. The following are some of the causes for an engine not starting readily.

1. Make sure the ignition is turned on.

2. Follow correct starting procedure and recognize the weather conditions. Remember these two things.

a. A warm engine in warm weather floods quite easily. Do not use the choke or pump the accelerator when starting. It is advisable to pull the hand throttle knob out enough to open the carburetor slightly before starting.

b. A cold engine in cold weather seldom floods, at least until after it starts. In very cold weather pump the accelerator three or four complete strokes to inject some fuel into the manifold. Keep the choke knob pulled all the way out until the engine starts and then gradually push it in. If the starting and ignition system is in good condition a cold engine will start readily. If you believe the engine is flooded due to excessive use of the choke or cranking without having the ignition turned on, pull the hand throttle knob out about half way to admit a large volume of air which will soon relieve the condition. As soon as engine starts gradually push hand throttle knob in.

3. If the battery is not fully charged or is faulty, it may cause hard starting, especially in cold weather. This is due to the fact that cranking the cold engine places such a strain on the battery that it does not supply a suitable ignition spark. In this case it may be possible to start the engine by pushing or towing the vehicle with the transmission in high gear, after which it should be taken to your dealer to have the battery and ignition system checked. Avoid using the starter excessively; if the engine does not start readily, investigate the cause while the battery is still in good condition.

4. Moisture on the distributor, coil, spark plugs or high tension wires may affect starting. Raise the hood and dry these units.

5. Improper engine timing, faulty distributor points, improper point gap, poor carburetion, intake leaks, improper valve adjustment, loose starting or ignition wiring, or faulty spark plugs may cause hard starting. Check these things systematically and make any necessary corrections.

6. If the starter cranks the engine at a good rate of speed and it still does not start, check the gasoline supply. If there is sufficient fuel, step on the starter and watch the ammeter needle for slight movement which would indicate that the low tension circuit of the ignition system is working satisfactorily.

With the aid of another person it is possible to check the ignition circuit further by placing the blade of a wood handled screwdriver across the terminal of a spark plug and holding it about ⅛ inch from side of engine. Have the other party step on starter and see if a good spark jumps the gap from screwdriver to engine. If there is a good spark on this test, evidently the trouble is in the fuel system. In cold weather there may be ice in the lines restricting fuel flow. It will probably be necessary to solicit the services of a service man to make necessary repairs.

Engine Misfires. This condition may be caused by many things, some of which can only be corrected by major service operations. However, the following things should be checked.

1. Check to see that all spark plug wires are connected to the spark plugs and properly pushed down into distributor cap. Also make sure they are not shorted or broken.

2. Check the spark plugs by shorting them to determine which cylinder may be missing. Remove the questionable plugs and clean, inspect and set the point gap at .035". If the plugs are thought to be faulty they should be replaced with plugs of the same make and number.

3. A flooded carburetor may also cause a rough running engine. When the carburetor is flooded there is usually fuel on the outside of carburetor body. Sometimes tapping on the body with a pair of pliers may relieve this flooding condition; otherwise, try to keep the engine running at a fast idle until you can get to a service station.

4. This condition may also be caused by an air leak into the intake manifold. Tighten carburetor to manifold and manifold to cylinder head nuts. Check for air leaks in the windshield wiper and hydrovac lines.

5. Improper valve tappet clearance. Check clearances according to instructions on page 23.

Carburetor Floods. This is usually caused by a sticking carburetor float, dirt between the needle valve and seat, or a leaky valve and seat. Temporary relief may be obtained by tapping the side of carburetor body with a pair of pliers. The carburetor should be overhauled as soon as possible to avoid further trouble.

Engine Runs Hot. In case of a hot engine check the following.

1. Check for lack of water in the cooling system.

CAUTION: In case the engine is very hot do not remove radiator cap until it has cooled off somewhat as you may be severely burned by the steam. Never put cold water in the cooling system until the engine has cooled off as this may crack the cylinder head.

2. Check for lack of oil in the engine. Do not run the engine without oil or serious damage will be done.

3. Check for loose or broken fan belt. As the fan belt also drives the water pump the engine will get hot very quickly if the belt is broken or slips excessively.

4. Anything in front of the radiator that restricts free flow of air will also cause overheating. Make sure that the radiator air passages are not restricted and remove anything that might restrict air flow.

5. Improperly set ignition timing or improperly adjusted valves will cause overheating and at the same time cause poor engine performance. Consult your local dealer for repairs.

Engine Noises. Certain fuels may produce a pronounced knock or "ping" on acceleration only. Although this is annoying it does not seriously damage the engine. It may be eliminated or decreased by the use of higher octane fuel, retarding the octane selector setting or by having the engine tuned up.

If a pronounced noise is noted, check to see that there is normal oil pressure and that the engine is not running too hot. Check for normal supply of oil in the engine. If you are unable to correct the cause of the noise it is advisable to call a service man or at least drive very carefully to the nearest dealer and if the noise gets worse stop the engine and wait for assistance.

LIGHTS

All Lights Go Out. This would indicate trouble at the thermal circuit breaker at the light switch. The circuit breaker is designed to protect the lighting circuits in case of a short circuit which would cause excessive current flow.

Tail or Stop Light Go Out. This is likely to be caused by a burned out fuse in the individual circuit.

Remove fuse box cover. Inspect the two fuses carefully and replace burned out or damaged fuse. Test circuit.

If the new fuse burns out, the circuit is probably shorted. If tracing the wires and checking for short circuits does not reveal the trouble the services of a Chevrolet dealer should be solicited.

One Light Goes Out. This would indicate a burned out filament in the individual light or possibly a loose connection in the wiring. The simplest way to check this is to install a new bulb or Sealed Beam unit as the case may be (see Lamps). If this does not correct the trouble the light circuit must be checked.

One Headlamp Burns Dim. This condition is usually caused by loose connections in the individual light circuit or poor ground connection between the light and the chassis frame. Make sure all light connections are clean and tight. Make sure the ground connections are not corroded or rusted and that they are all tight.

GENERAL

Unable to Unlock Door. Water may get into the door locks as a result of storms or having the vehicle washed with a power washer. In freezing weather this may freeze the lock cylinder so that it cannot be unlocked. If the truck cannot be taken to a warm garage to thaw out and dry the lock, it is generally possible to heat the key with a match and insert it in the lock. After repeating this a few times the lock will absorb enough heat to thaw out and unlock. If this trouble is experienced the lock should be removed, dried and lubricated.

Hydrovac Fails to Operate. Hydrovac failure does not prevent the normal use of the hydraulic brakes unless the brake fluid leaks out of the system. Should the hydrovac fail to operate, check for air leaks between the manifold and the hydrovac unit. If there are no vacuum leaks you should contact a Chevrolet dealer.

Engine Runs but Vehicle Will Not Move. This may be caused by broken axle shaft, stripped ring or pinion gear, broken universal joint, broken propeller shaft, transmission trouble or clutch trouble.

With all models except the ½-ton it is possible to place the transmission in gear, run the engine and inspect the drive line for location of trouble. If the drive shaft does not turn the trouble is in the transmission or clutch, while if the shaft turns

back to the differential carrier the trouble is either axle gears or axle shafts.

The full-floating type axle shafts may be changed without special equipment. See instructions under "Rear Axle Care." It may be necessary to remove the opposite axle shaft in order to remove the broken piece of shaft.

NOTE: Make sure that all pieces of the broken shaft are removed.

CHAPTER V

GENERAL INFORMATION

MANUFACTURER'S WARRANTY

It is expressly agreed that there are no warranties, expressed or implied, made by either the Dealer or the Manufacturer on Chevrolet motor vehicles, chassis or parts furnished hereunder, except the Manufacturer's warranty against defective materials or workmanship as follows:

"The Manufacturer warrants each new motor vehicle, including all equipment or accessories (except tires) supplied by the Manufacturer, chassis or part manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any part or parts thereof which shall, within ninety (90) days after delivery of such vehicle to the original purchaser or before such vehicle has been driven 4,000 miles, whichever event shall first occur, be returned to it with transportation charges prepaid and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of its vehicles.

"This warranty shall not apply to any vehicle which shall have been repaired or altered outside of an authorized Chevrolet Service Station in any way so as in the judgment of the Manufacturer to affect its stability and reliability, nor which has been subject to misuse, negligence or accident."

The Manufacturer has reserved the right to make changes

in design or add any improvements on motor vehicles and chassis at any time without incurring any obligation to install same on motor vehicles and chassis previously purchased.

TIRE WARRANTY

The tires (not covered by the Chevrolet Standard Warranty) are guaranteed by the tire manufacture according to the standard Tire Manufacturer's Warranty. If, in your opinion a tire is faulty, we suggest that you contact the nearest factory branch or a community tire dealer handling the make tires used on your Chevrolet.

CHAPTER VI

TECHNICAL DATA

Vehicle Serial Number—Stamped on plate located on left body hinge pillar on all models except flat face cowl which has plate located on left hand cowl inner panel.

Engine Number—Stamped on boss on right side of cylinder block to the rear of ignition distributor.

UNIT CAPACITY CHART

Engine Oil	5 qts.
Transmission	
3-Speed	1½ pts.
4-Speed	6 pts.
Rear Axle	
½-Ton	4½ pts.
¾- and 1-Ton	6 pts.
1½-Ton	11 pts.
2-Ton Regular	12 pts.
2-Speed	14½ pts.
Gasoline Tank	
Cab Mounted Tank	17½ gal.
All ½- and ¾-Ton and 1-Ton Forward Control	16 gal.
All others except School Buses	18 gal.
All School Bus Chassis	30 gal.
Cooling System	
Except 2-Ton, C.O.E. and Special Heavy-Duty Radiator	15 qts.
2-Ton, C.O.E. and Special Heavy-Duty Radiator	17 qts.

LAMP BULB CHART

Location	C.P.	Bulb No.
Headlamp	45-35 watts	Sealed Beam
Parking Lamp	3	63
Tail and Stop Lamp		
Panel Models (1 Bulb)	21-3	1154
All Others Tail	3	63
Stop	21	1129
Instrument Cluster	2	55
Ignition Lock	2	55
Dome Lamp	15	87
Headlamp Beam Indicator	1	51

SPECIFICATIONS

Wheelbase

½-Ton	116″
¾-Ton	125¼″
1-Ton	137″
1½-Ton (short)	137″
1½-Ton (long)	161″
2-Ton Conventional (short)	137″
2-Ton Conventional (long)	161″
2-Ton Conventional (extra long)	179″
2-Ton C.O.E. (short)	110″
2-Ton C.O.E. (reg.)	134″
2-Ton C.O.E. (long)	158″
1½-Ton School Bus Chassis	161″
2-Ton School Bus Chassis	199″

Engine

	Thriftmaster Model	Loadmaster Model
Number of Cylinders	6	6
Bore	3½″	3 9/16″
Stroke	3¾″	3 15/16″
Piston Displacement	216.5 cu. in.	235.5 cu. in.
Firing Order	1-5-3-6-2-4	1-5-3-6-2-4
Compression Ratio	6.6 to 1	6.7 to 1

SPECIFICATIONS—Continued

Engine	Thriftmaster Model	Loadmaster Model
Horsepower (AMA)	29.4	30.4
Horsepower (Rated)	92	105 Conventional 100 C.O.E. 92 Forward Control
Number of Main Bearings	4	4

Transmission Ratios

	3-Speed	4-Speed
First (low)	2.94 to 1	7.06 to 1
Second	1.68 to 1	3.58 to 1
Third	Direct	1.71 to 1
Fourth		Direct
Reverse	2.94 to 1	6.78 to 1

Rear Axle Ratios

	Type	Ratio
½-Ton	Semi-floating Hypoid	4.11 to 1
¾-Ton	Full-floating Hypoid	4.57 to 1
¾-Ton (R.P.O.)	Full-floating Hypoid	5.14 to 1
¾-Ton Forward Control	Full-floating Hypoid	5.14 to 1
1-Ton	Full-floating Hypoid	5.14 to 1
1½-Ton (R.P.O.)	Full-floating Hypoid	5.43 to 1
1½-Ton (regular)	Full-floating Hypoid	6.17 to 1
2-Ton	Full-floating Hypoid	6.17 to 1
2-Speed Axle	Full-floating Hypoid	6.13 to 1 high 8.10 to 1 low

ADJUSTMENT SPECIFICATIONS

Spark plug gap ..... .035"

Breaker point gap ..... .018"-.024" (new lever)
.015"-.022" (old lever)

Distributor points to break when steel ball in flywheel is in line with pointer on flywheel housing.

Octane selector should be set for the grade of fuel being used to produce a slight "ping" on acceleration.

Carburetor idling adjustment (C.O.E. and Forward Control)	½ to 1½ turns open
Carburetor idling adjustment (Conv.)	1 to 2½ turns open
Engine idling speed	450 to 500 R.P.M.
Intake valve clearance	.006" to .008" hot
Exhaust valve clearance	.013" to .015" hot
Heavy-duty operation intake	.010" hot
Heavy-duty operation exhaust	.020" hot
Clutch pedal free travel	¾" to 1"
Brake pedal toe-board clearance	13/16"
Brake shoe release after slight drag is felt	
½-Ton (front and rear)	14 adj. notches
¾-Ton (front and rear)	5 adj. cover notches
1, 1½ and 2-Ton (front)	5 adj. cover notches
1-Ton (rear)	⅔ turn of adj. pinion
1½ and 2-Ton (rear)	3 adj. notches
Toe-in of front wheels	
½ and ¾-Ton (Except Forward Control)	1/16" to 3/16"
1, 1½ and 2-Ton Conv., C.O.E. and Forward Control Models	1/16" to ¼"

1951 LOAD CAPACITY CHART

MODEL				NOMINAL RATING	GROSS VEHICLE WEIGHT	MINIMUM TIRES		REQUIRED R.P.O. EQUIPMENT
						TIRE SIZE AND PLY RATING		
TYPE	SERIES		WHEEL-BASE			FRONT	REAR	
SEDAN DELIVERY	1508	JJ	115		§ 4000	6.70-15-4	6.70-15-4	
					4100	6.70-15-6	6.70-15-6	
LIGHT DUTY	3100	JP	116	½ Ton	§ 4200	6.00-16-6	6.00-16-6	
					* 4800	6.00-16-6	6.50-16-6	
MEDIUM DUTY	3600	JR	125¼	¾ Ton	§ 5400	15-6	15-6	
					* 5800	7.00-17-6	7.00-17-8	2-stage, 8-leaf rear spring
	3742	JT	125¼	¾ Ton	§ 6200	15-6	15-6	
					6600	7.00-17-6	7.00-17-6	
					* 7000	7.00-17-6	7.00-17-8	
	3800	JS	137	1 Ton	§ 6200	7.00-17-6	7.00-17-8	
					7000	7.00-17-6	7.50-17-8	
					* 8800	7.00-18-8	7.00-18-8 Dual	2-stage, 8-leaf rear spring and auxiliary, and hydrovac
	3942	JU	137	1 Ton	§ 6700	7.00-17-6	7.00-17-6	
					7100	7.00-17-6	7.00-17-8	Double acting rear shock absorbers
					7500	7.00-17-6	7.50-17-8	Above plus stabilizer
					*10000	7.00-18-8	7.00-18-8 Dual	Above plus 2-stage, 8-leaf rear spring and auxiliary, and hydrovac

HEAVY DUTY	4100	UJ	137	1½ Ton	§10000	6.50-20-6	6.50-20-6 Dual	
					11000	6.50-20-6	7.00-20-8 Dual	
	4400	UK	161		12500	6.50-20-6	7.00-20-10 Dual	11-leaf rear spring and aux., hydrovac, and on 4100, heavy duty frame
					*14000	7.00-20-8	7.50-20-8 Dual	Above plus 8-leaf front spring
	5100S 5400S 5700S	UPS URS USS	110 134 158	1½ Ton Special Cab-Over-Engine	§14000 *15000	7.50-20-8 7.50-20-8	7.50-20-8 Dual 8.25-20-10 Dual	
	6100S 6400S 6500S	UVS UWS UYS	137 161 179	1½ Ton Special Conventional				
	5100 5400 5700	UP UR US	110 134 158	2 Ton Cab-Over-Engine	§14000 *16000	7.50-20-8 7.50-20-8	7.50-20-8 Dual 8.25-20-10 Dual	
	6100 6400 6500	UV UW UY	137 161 179	2 Ton Conventional				
SCHOOL BUS CHASSIS	3802 Plus RPO 329A	JS	137	16 Pupils	*§7600	7.50-17-8	7.50-17-10	9-leaf rear spring and hydrovac
	4502	UL	161	30 Pupils	§10500	6.50-20-6	6.50-20-6 Dual	
				36 Pupils	*12000	6.50-20-6	7.00-20-8 Dual	
	6702	UX	199	42 Pupils	§13500	7.50-20-8	7.50-20-8 Dual	
				48-54 Pupils	*15000	7.50-20-8	8.25-20-10 Dual	

*—A plate is supplied with each vehicle showing chassis number and maximum Gross Vehicle Weight (GVW). The maximum GVW rating includes the truck chassis with lubricants, water and full tank or tanks of fuel, plus the weight of the cab or driver's compartment, body, and special chassis and body equipment, and payload. These GVW ratings are reduced per above table when tires of a lesser capacity are used. Series JJ plate shows no GVW.

§—Base trucks, tires shown included in base price.

Extra ply rating and/or oversize tires and equipment are available with no increase in gross vehicle weight rating.

OWNER'S SERVICE POLICY

Upon delivery of your new Chevrolet truck, you received an Owner Service Policy from your Chevrolet dealer. Please read it carefully.

Under the terms of this policy you are entitled to receive, from any Chevrolet dealer in the U.S.A. or Canada, an inspection and adjustment, on a no charge basis, if the policy coupon is presented within 1500 miles of vehicle operation.

Any Chevrolet dealer in the U.S.A. or Canada is authorized to replace, without charge for material or labor, any parts found to be defective under the terms of the Chevrolet Factory Warranty.

Always keep the Owner Service Policy with the truck during the warranty period as it serves to introduce the owner to any Chevrolet dealer.

OWNER SERVICE POLICY

1. Delivery . . . The Dealer will see that the vehicle is properly prepared before delivery to the owner, in accordance with Standard Factory instructions.

2. Use of Owner Service Policy . . . The Owner Service Policy introduces the owner to all authorized Chevrolet Service Stations and entitles the owner to receive service in accordance with the terms of this Policy. The owner should carry this Policy in the vehicle at all times.

3. Installation of Parts Furnished Under Warranty . . . Parts supplied under the manufacturer's warranty will be installed by any Chevrolet dealer in the United States or Canada without any charge for labor. The manufacturer's warranty is set forth at length in the Owner's Manual.

4. 1000-Mile Adjustment . . . The attached coupon, when signed by the Selling Dealer, entitles the owner to the inspection and adjustments as listed on the back of said coupon. These services are to be given free by any Chevrolet dealer in the United States or Canada upon presentation and surrender of the coupon.

5. Inspections . . . In order that your Chevrolet vehicle may provide maximum service and dependability, we suggest that you have it inspected every 30 days or 1000 miles by an authorized Chevrolet service station.

6. Tourist Privilege . . . Upon presentation of this Policy by the owner when touring, any Authorized Chevrolet Service Station in the United States or Canada will perform the services as outlined in paragraphs three, four and five regardless of where the vehicle may have been purchased.

7. Change of Residence . . . In case the owner changes his residence from one location to another before the warranty period has expired, the Authorized Chevrolet Service Station serving the locality into which the owner moves will, upon presentation of this Policy, render any no-charge service to which the owner may be entitled as outlined in paragraphs three, four and five.

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